RECENT TRENDS IN MANAGEMENT GAMING- A COMPARATIVE SURVEY OF MANAGEMENT GAMING PRACTICES IN AMERICAN COLLEGIATE SCHOOLS OF BUSINESS IN 1962 AND 1974

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THESIS

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IN
AMERICAN COLLEGIATE SCHOOLS OF BUSINESS
IN 1962 AND 1974

by

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June 1974

Thesis Advisor: J. A. Jolly

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SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)*: Recent Trends in Management Gaming-A Comparative Survey of Management Gaming Practices in American Collegiate Schools of Business in 1962 and 1974	5. TYPE OF REPORT & PERIOD COVERED: Master's Thesis; June 1974 / 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Lance Jay Strauss	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Naval Postgraduate School, Monterey, California 93940	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS: Naval Postgraduate School, Monterey, California 93940	12. REPORT DATE: June 1974 / 13. NUMBER OF PAGES: 108
14. MONITORING AGENCY NAME & ADDRESS *(if different from Controlling Office)*: Naval Postgraduate School, Monterey, California 93940	15. SECURITY CLASS. *(of this report)*: Unclassified / 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Business Gaming
Computer Gaming
Gaming
Management Gaming
Operational Gaming
Simulation

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

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The results of the 1974 survey provided conclusive evidence that in the years following 1962, management gaming has gained increased acceptance and use as an education technique. This increase in acceptance and use of management gaming from 1962 to 1974 was brought to light by two primary

20. (cont'd)

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
June 1974

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Through a survey of 89 collegiate schools of business, 1974 usage of management gaming in both undergraduate and graduate curriculums was determined and compared to the results of a similar survey of 107 schools of business in 1962.

The results of the 1974 survey provided conclusive evidence that in the years following 1962, management gaming has gained increased acceptance and use as an educational technique. This increase in acceptance and use of management gaming from 1962 to 1974 was brought to light by two primary findings of this comparative study. First, that while in 1962 only 71% of the survey respondents reported that a management game was being used in some way in the institution's curriculum, in 1974, 95% of the survey respondents reported using a management game. Secondly, the average percentage of course time devoted to management gaming, for all undergraduate and graduate courses reporting the use of management games, increased from 20% of course time in 1962 to 32% of course time in 1974.

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I. INTRODUCTION

A. BACKGROUND

In the time period beginning from 1956 and lasting until approximately 1962, a new educational technique rose from a struggling infancy to a somewhat stabilized adolescence. This technique, entitled "management gaming" or synonymously "business gaming" promised in its early stages of development to be the panacea for the complex problem of educating what is loosely defined as a "manager." Management education is unique in that no other area of education exists wherein there is so much uncertainty as to what constitutes a proper educational background for professional practice [Greenlaw, et al. 1962, p.3]. This is primarily due to the fact that being a manager involves a disproportionate amount of intangible skills.

Unfortunately, the word "game" is a rather misleading term for a technique which neither purports entertainment or is associated with the "theory of games" developed by Von Neuman and Morgenstern [1947, p.48]. Rather, this relatively new approach to management education is a controlled simulation or a sequential decision making exercise structured around a model of a business operation in which participants assume the role of managing a simulated operation [Greenlaw, et al. 1962, p.5].

Management games were designed to provide the fledgling undergraduate or graduate business student with his first opportunity to solve the problems of business in their totality, and to develop the "commercial courage" required in a risk-based private enterprise [Greenlaw, et al. 1962, p.256]. Unlike traditional classroom methods of management education which involve no active "practice" in managing, or the case-study method which allows students to make business "decisions" (yet receive no feedback on

the adequacy, quality, or effect on these decisions), the management game was designed as an environment. In this environment, students could get feedback and have the experience of "living" with the consequences of their decisions [Fulmer 1963, p.8]. Students would be role playing in an atmosphere where they would be forced to deal with the abstract and intangible problems of business, such as questions regarding organization, communication and control, and the setting of objectives and long and short range goals. Gaming was to teach the importance of planned, critically timed decisions and flexible organized effort. Most importantly, though, the simulated environment of the management game was to create two main realizations about the "business world" within the student: First, that in order to achieve success in an economic environment, there must be a balance between interacting managerial functions within an organization [Kibbee, et al. 1961, p.47]. Secondly, that as another requisite to success, organizations must strive to understand the complex relationship of how their success or failure is influenced by their competitors decisions and actions [Martin 1960, p.1].

In 1962, the Bureau of Business Research at the University of Texas believed that management gaming was a valuable educational innovation. They felt that usage information would be of particular value to business schools in assessing the potential and future of gaming within their institutions [Dale and Klasson 1964, p.2].

Hence, in 1962, Alfred G. Dale (a social science research associate at the Linguistics Research Center, University of Texas) and Charles R. Klasson (an assistant professor of management, University of Texas) under the auspices of the Bureau of Business Research, undertook a survey of American collegiate schools of business to develop a status report on the use of management gaming.

A survey questionnaire was sent to 107 colleges and universities that were members of the American Association of Collegiate Schools of Business. The results of the survey were subsequently published by the Bureau of Business Research at the University of Texas in 1964.

B. PURPOSE OF RESEARCH

The purpose of this thesis research is to attempt to determine the trend and course of management gaming over the twelve year period from 1962 until 1974 through a direct comparison of the 1962 Dale and Klasson survey results to a similar 1974 survey performed by this author.[1]

C. EXPLANATORY NOTES

In order to achieve as direct a comparison as possible between the use of management gaming in 1962 and 1974, it was decided to use the identical survey questionnaire in 1974 that was used by Dale and Klasson in 1962.

Although identical in content to the 1962 survey questionnaire, the 1974 survey questionnaire (Appendix F), was given a different title. The change was from "Current Utilization of Business Gamine in Collegiate Schools of Business" to "Current Utilization of Management Gaming in Collegiate Schools of Business."

It was felt by this author that "management gaming" was a much better descriptor for the educational technique than "business gaming." The

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[1]References 3 and 6 provide a fairly accurate account on the development of management gaming prior to 1962. References 1, 10, and 11 provide extensive discussions on almost all aspects of gaming. Reference 4 is the only major publication that documents the development and use of a management game over a multi-year period, while references 2, 9, and 15 are the most recent major publications about gaming as well as having a fairly complete directories of games. An extensive gaming bibliography is contained in reference 9, while the most recent is contained in reference 13.

development of this instructional technique over the past twelve years has seen it move from a limited "business" use to a broadened intra-disciplinary "management" use; hence the need for the title change.

D. SURVEY SAMPLE AND INFORMATION

The list of institutions to be surveyed in 1974 was derived from the list of survey respondents appended to Dale and Klassons' publication of their results. Dale and Klasson initially sent survey questionnaires to the previously mentioned 107 colleges and universities that were members of the American Association of Collegiate Schools of Business in 1962. They received a total of 90 replies (84%) and appended the names and addresses of 89 of these 90 institutions to their published survey results.[2] It was these 89 institutions that were surveyed in 1974.

In addition to the survey questionnaire, a "cover letter" was also sent to each of the 89 institutions. The letter explained to them that they had been surveyed twelve years ago by Dale and Klasson, and also listed the name of the respondent completing the school's 1962 questionnaire.

The information sought in the 1974 survey was that sought in the 1962 survey, namely: (1) the extent to which management games were being used in each college's curriculum, (2) why games were not being used, (3) when each college first started using management games, (4) whether or not management gaming had been permanently integrated into the curriculum, (5) whether or not the faculty had developed games used in the college, (6) whether or not the college was currently engaged in any specific research directed toward the scientific validation of potential educational

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[2] Apparently one institution desired anonymity.

values of the gaming technique, (7) names of computerized and noncomputerized games being used, (8) names of undergraduate and graduate courses in which games were being used, (9) whether or not the courses which used games were required or elective, and (10) percent of total course time devoted to gaming exercises.

The 1974 survey received an 82% response with a total of 73 of the 89 surveyed institutions responding.[3] This is comparable to the 84% response to the 1962 Dale and Klasson survey.

E. LIMITATIONS OF DATA

As can be observed by examining the 1974 survey questionnaire, its construction limited the extent of a respondent's response. Inquiries were limited to how specific games were used in specific courses. Respondents were not asked to describe how particular games were used to achieve course objectives. Course titles were only asked for and not course content. While this made classification of courses into subject areas somewhat difficult, it was felt that due to the nature of the survey, course classification was not a critical issue.

In general, 1974 survey respondents were very conscientious in filling out the questionnaire completely and carefully. Several institutions went to a great deal of trouble to accomplish this, even to the extent of photocopying the questionnaire and distributing it to course heads within their institutions. Also, many respondents made supplementary and explanatory comments on their survey questionnaire to help explain their response. Several institutions, in addition to returning the questionnaire, included supplementary folders and pamphlets describing their games and gaming activity.

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[3] See Appendix E for a list of 1974 survey respondents.

However, while the majority of respondents completed meaningful questionnaires, some provided inconsistent and obviously hastily filled out replies. Dale and Klasson encountered this same problem in 1962. Hence, they were unable to report on information regarding the number of students who had received training and exposure to management gaming and also on information on individual school enrollments. The combination of lack of 1962 comparative data in these two areas as well as equally unreliable 1974 data provided by respondents, precluded including discussions of these topics in this thesis.

It was assumed that all other data found in the replies was accurate. However, it is fully realized that one respondent completing a questionnaire which reports on a total institution's use of management gaming is a basic limitation to the accuracy and completeness of both the 1962 and 1974 survey data.

In some instances respondents did not complete all parts of the questionnaire. Where numbers and percentages do not total correctly in the text, tables, and figures which follow, footnotes are included explaining the reasons for the numerical discrepancies.

F. SUMMARY OF GENERAL FINDINGS

Sixty-nine of the 73 responding institutions (95%) reported that a management game was being used in some way in the college's curriculum in 1974. This represents an increase of 24 percentage points from 1962 where only 64 of 90 responding institutions (71%) reported the use of management gaming.[4]

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[4] More rigorous statistical analysis about this statement and other similar statements which follow are discussed in Appendix A.

Assuming that the non-responding schools in 1974 (16 schools) were not using gaming, this would reduce the percentage of schools using games from 95% to 78%, still indicating that greater than three-fourths of the 1974 survey population were using management games. This 78% still represents an increase in usage compared to 1962, for if the 27 non-responding schools in 1962 were assumed not to be using games, the percentage of schools using games would then be 60%.

Dale and Klasson, in examining the year in which management games were adopted, concluded that the first adoptions occurred in 1956, corresponding to the time that schools began developing and using computer simulations. They then observed that the number of schools using games increased rapidly during the years 1957 through 1960 after which they noted that the rate of increase began to fall off. Table I presents these data.

The 1974 survey results show a somewhat different pattern of the years of adoption of management games in American schools of business, as can be seen in Table I. The Dale and Klasson 1962 data claims that of all schools using games at that time, all adopted the technique prior to 1962. The 1974 survey results, however, indicate that of the 69 schools reporting the use of games, only 27 schools, or 40% adopted games in 1962 or earlier, with the majority, 52% or 36 schools, claiming years of introduction 1963 or later.[5]

There are several possible explanations for the differences between the 1962 and 1974 data in this area. First, of the seventy-three 1974 replies to the survey, only 15 (21%) were completed by the same person

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[5]Eight percent or 6 schools did not provide data regarding year of adoption.

TABLE I

YEAR OF INTRODUCTION OF MANAGEMENT GAMES
AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS
IN 1962 AND 1974

YEAR	NUMBER OF SCHOOLS, 1962	NUMBER OF SCHOOLS, 1974
1956	2	1
1957	2	1
1958	10	3
1959	15	6
1960	20	7
1961	11	6
1962	4	3
1963	0	5
1964	0	0
1965	0	6
1966	0	5
1967	0	1
1968	0	7
1969	0	3
1970	0	4
1971	0	4
1972	0	0
1973	0	1
1974	0	0
Not Reported	0	6
Total	64	69

as the one completing the survey questionnaire in 1962. Secondly, as previously discussed, it is questionable that one individual completing a survey questionnaire for a large institution can be completely aware of all instances of the usage of management gaming at his school. Nevertheless, the 1974 survey results do indicate the introduction of management gaming in schools which it perhaps hadn't been in use prior to 1962.

Of the 69 schools using management games in 1974, 78% (54 schools) reported that gaming had been permanently integrated into the curriculum, i.e. had adopted the technique as a formal part of at least one course. This compares to 63% of those using games in 1962, indicating permanent integration of gaming; an increase of 15 percentage points over the twelve year period.

Twenty-eight percent of those schools using management games in 1974 reported being engaged in specific research directed towards the scientific validation of management gaming as an educational technique. This is approximately the same proportion as in 1962, however, of the 18 schools listed below[6] only 5 reported being active in research in 1962. These 5 are distinguished by an asterisk following their name.

University of Alabama
University of California at Los Angeles
Florida State University*
Georgia State University
Michigan State University*
University of Montana
University of Nebraska*
University of Nevada
University of New York
University of New York-Graduate School of Business
Northwestern University*
University of Oregon*
Oregon State University
Pennsylvania State University
University of South Carolina

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[6]Although a total of 19 schools actually reported being involved in research, one school did not identify itself.

Southern Methodist University
Texas Technological College
University of Toledo

It is not possible to determine from the survey questionnaire whether or not the five schools listed, as being involved in research and validation of management games both in 1962 and 1974, conducted their research on a continuous basis during the twelve year period. However, it can be assumed that over the past twelve years, an additional 14 schools became involved in management gaming research bringing to 30 the total number of schools having performed research at one time or another between 1962 and 1974. These 30 schools represent 28% of the original 1962 survey population of 107 schools.

Dale and Klasson commented that as of 1962, little had been published on the subject of validation of management gaming as an educational technique. This author found essentially the same situation in the years following 1962, with many publications commenting on the need for validation, yet few attempting to actually do so.[7]

Only 4 of the 73 responding institutions (5%) in 1974 indicated that they were not using management games. This represents a significant decrease from the 29% of the responding institutions in 1962 reporting that they didn't use games. Of the 4 not using games in 1974, 2 listed no reasons as to why they were not. Of the 2 schools listing reasons for not currently using gaming, both stated that they had used games in the past. One school listed as the only reason for its not using games was that it thought that games were not a proven and effective technique. The other school listed lack of adequate facilities and funds, lack of

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[7]References 4, 8, and 13 are examples of validation attempts. Reference 4 is one of the most extensive validation attempts, while Reference 13 is one of the more recent.

qualified faculty members, and lack of appropriate games as its reasons for not using games. However, it desired to use games and had plans to use games sometime during the 1974-1975 academic year.

In 1962, the main reason listed by the 26 schools not using games was that it was felt that games were not as yet a proven and effective technique (38% of the 26 felt this way). This reason was followed closely by lack of qualified faculty members (35%) and lack of adequate facilities and funds (28%) as preventative factors to using games. However, 55% of the schools responding in 1962, that were not using management games, reported that they had used games in the past, and 69% expressed the desire that they would like to use games at sometime during the future.

In summary, 69 of the 73 schools (95%) responding to the 1974 survey reported the current use of management games. This represents a substantial increase from the 71% of the schools surveyed in 1962 reporting the use of games, and suggests that almost all collegiate schools of business are using the technique.

The 4 schools reporting in 1974 that they were not using games listed no one particular reason for not using them. Only one of these 4 was unconvinced as to the value of management gaming, a significant decrease from the 10 schools in 1962 feeling this way.

II. ANALYSIS OF THE UTILIZATION OF MANAGEMENT GAMING IN UNDERGRADUATE AND GRADUATE COURSES

A. OVERALL USE OF GAMES

With an increase from 71% to 95% in the proportion of schools using management games of those schools responding, from 1962 to 1974, it might seem logical to assume that the total number of courses using games should also proportionately increase over the twelve years. This would seem a reasonable expectation, especially in light of the fact that in 1962, using 1956 as a base date, management gaming had only been in use for 6 years, whereas in 1974 it has been in use for 18 years.

However, close examination of the 1974 survey data does not reveal such a general increase in the total number of courses using games, but rather two distinct shifts in how courses using games were utilized within individual institutions and in how games were utilized within individual courses.[8]

The first shift in the use of management games may be observed by first examining Table II and then by comparing Tables III & IV, and VI & VII.

Table II reveals that while in 1962 the greatest percentage of schools used games in one course, followed by the next greatest percentage which used games in 2 courses, the opposite was true in 1974. In 1974, 20

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[8] It is fully realized that many other factors come into consideration when examining the use of gaming in schools. Numbers of students trained with management games, as well as school enrollments are also important factors, but for previously mentioned reasons, these factors could not be included in this research. Another important factor which is relevant is total course offerings per school. For example, a school offering only 25 courses and using gaming in 11 of these courses would indicate that that school integrated gaming into its curriculum to a greater extent than a school offering 100 business courses and using games, also, in 11 of them.

TABLE II

NUMBER OF COURSES IN WHICH MANAGEMENT GAMES UTILIZED
AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS
IN 1962 AND 1974

NUMBER OF COURSES	NUMBER OF SCHOOLS---PERCENTAGE	
	1962	1974
1	22---34%	17---24.5%
2	15---23%	20-----29%
3	14---22%	9-----13%
4	6----9%	9-----13%
5	2----3%	4------6%
6	3----5%	1----1.5%
7	1----2%	0
8	0	1----1.5%
9	0	1----1.5%
10	0	0
11	0	1----1.5%
Miscellaneous, non-course use	0	1----1.5%
Not Reported	1----2%	5------7%
Total	64--100%	69----100%

schools (29%) used games in 2 courses followed by 17 schools (24.5%) which used games in only one course. Examining the number of schools using games in 3 and 4 courses, one finds a slight decrease in the number of schools using games in 3 courses and a slight increase in the number of schools using games in 4 courses from 1962 to 1974. While the percentage of school using games in 5 or more courses remained approximately the same over the twelve year period (10% in 1962 and 12% in 1974), the maximum number of courses using games per school reported, increased from 1962 to 1974. One school reported using games in 7 courses in 1962, while one school each reported using games in 8, 9, and 11 courses in 1974.[9]

Comparing Tables III and IV, one finds a 36% increase in the total number of undergraduate courses using management games (76 courses in 1962, 103 in 1974). However, comparing Tables VI and VII, one finds a 5% decrease in the number of graduate courses using management games (75 courses in 1962, 71 in 1974). Combining undergraduate and graduate courses reveals only a 15% increase in the total number of courses using management games (151 undergraduate and graduate courses in 1962, 174 in 1974).

The second shift taking place between 1962 and 1974, that is, in how games were utilized within individual courses, may be observed by comparing Tables III & VI to Tables IV & VII.

From Tables IV and VII, it can be determined that in 1962, a total of 6 undergraduate and graduate courses were reported that used games between

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[9]From the 1962 data presented in Table II, Dale and Klasson concluded that business students were exposed to a management game at least once prior to completing their education, but probably not greater than twice. The 1974 data leads to the same conclusion, with only approximately 40% of responding schools using games in more than two courses.

91% and 100% of course time. These 6 courses represent 4% of the 151 undergraduate and graduate courses reported in 1962. From Tables III and VI it can be determined that in 1974, a total of 21 undergraduate and graduate courses were reported that used games between 91% and 100% of course time. These 21 courses represent 12% of the 174 undergraduate and graduate courses reported in 1974. Thus, in 1974, there was greater than three times the number of courses using games almost exclusively than in 1962.[10]

Of these 21 courses using games between 91% and 100% of the course time in 1974, 4 had specific course titles of "Management Game" or "Business Game." Aside from these 21 courses, an additional 2 had similar titles, yet used games less than 91% of the course time. Only one course in 1962 bore a related "Management Game" title. The fact that in 1962 there was only one course of this nature (as far as could be determined by course titles) and in 1974 there were six, is another indicator of the increasing acceptance of management games as an educational technique over the 1962 to 1974 period.

Most importantly, regarding the use of games within courses, is the increase in the average percentage of course time devoted to gaming from 1962 to 1974. The average percentage of course time devoted to gaming in all undergraduate and graduate courses increased from 20% in 1962 to to 32% in 1974. This was one of the major 1974 survey findings.[11]

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[10]These 21 courses each used games 100% of course time. It could not be determined whether the 6 courses reported in 1962 using games between 91% and 100% as using games exclusively 100% of course time.

[11]Percentage of course time devoted to gaming will be discussed in greater detail later in this thesis.

In summary, the overall utilization of management games has increased from 1962 to 1974. The total number of undergraduate and graduate courses using games increased from 151 in 1962 to 174 in 1974. Additionally, the average percentage of course time devoted to gaming of all undergraduate and graduate courses increased from 20% in 1962 to 32% in 1974. The preceding two observations as well as shifts in how courses using games were utilized within individual institutions and in how games were utilized within individual courses, all provided conclusive evidence of increased acceptance of management gaming as an educational technique over the twelve year period, 1962 to 1974.

B. UNDERGRADUATE COURSES[12]

Table III presents a tabulation of data regarding the 1974 undergraduate use of management games classified as to: (1) subject area,[13] (2) whether or not a course was required, (3) year in which course was offered, and (4) percentage of course time devoted to gaming. Table IV presents the same tabulation of data regarding undergraduate use of management games as collected by Dale and Klasson in 1962.

In 1974, a total of 103 undergraduate courses of which 66 were different, reported using management games. This represents a 36% increase over the total number of undergraduate courses using games as reported in

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[12] For a detailed listing of individual undergraduate courses using management games, see Appendix B.

[13] Each course was classified into one of six subject areas: accounting, business policy, finance, management, marketing, and miscellaneous. These were the six classifications used by Dale and Klasson in 1962. The classification of a course was done only on the basis of course title. It is fully realized that course titles are not always representative of course content.

For an important discussion of an alternative course classification method in the management and miscellaneous areas, see Appendix D.

1962 (76 courses) and a 74% increase in the number of different courses. Thus, it is evident that not only has the total number of undergraduate courses using management games increased, but that management gaming has spread substantially throughout undergraduate business education, as shown by the 74% increase in the number of different courses offered.

Together, three subject areas in 1974, miscellaneous (27 courses), business policy (26 courses), and management (23 courses) accounted for 74% of the undergraduate courses using management games. This compares to business policy (21 courses), management (20 courses), and marketing (17 courses) which were those subject areas which accounted for approximately three-fourths (76%) of undergraduate courses using games in 1962.

Two subject areas increased their percentage share of total undergraduate courses reported from 1962 to 1974, the finance and miscellaneous course areas. Each increased its share of total undergraduate courses reported 10 percentage points; finance courses from 1% in 1962 to 11% in 1974, and miscellaneous courses from 16% in 1962 to 26% in 1974. The miscellaneous course area had the greatest numerical increase in courses with 12 courses in 1962 to 27 courses in 1974, and also was the largest subject category in 1974. With 21 courses, the business policy area was the largest category in 1962.

Three subject areas showed decreases in their percentage share of total undergraduate courses reported from 1962 to 1974: accounting, management and marketing. The marketing area suffered the greatest decrease numerically as well as percentage wise, with 17 courses in 1962 representing 22% of all undergraduate courses reported, to 13 courses in 1974 representing 13% of all courses reported. The accounting area in 1974 replaced the finance area in 1962 as having the smallest number of courses of the six categories.

TABLE III

INFORMATION ON UNDERGRADUATE COURSE AREAS IN WHICH MANAGEMENT GAMES UTILIZED, AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1974

Subject area	Total number of courses	Number of different courses	Required courses	Elective courses	Year offered					Percentage of course time devoted to gaming									
					1	2	3	4	3 or 4	<5	6-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Accounting	3	3	2	1	0	1	0	2	0	0	1	0	0	0	2	0	0	0	0	0
Business policy	26	6	23[A]	2	0[B]	1	0	21	0	0[C]	3	7	6	5	0	1	0	2	1	0
Finance	11	9	10	1	0[D]	0	4	5	1	4[E]	5	1	0	0	0	0	0	0	0	0
Management																				
General	16	13	12	4	1[F]	0	3	8	1	1[G]	0	3	1	2	1	0	0	1	0	6
Production	6	5	6	0	0	0	1	4	1	0	1	3	1	0	1	0	0	0	0	0
Personnel	1	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Subtotal	23	19	19	4	1	0	4	12	3	1	1	7	2	2	2	0	0	1	0	6
Marketing																				
General	12	6	11	1	0[H]	1	5	3	2	0[I]	2	5	3	1	0	0	0	0	0	0
Special	1	1	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
Subtotal	13	7	11	2	0	1	5	4	2	0	2	5	3	2	0	0	0	0	0	0
Miscellaneous	27	22	17[J]	8	3[K]	1	6	10	6	4[L]	2	11	2	0	0	0	0	2	2	3
Total	103	66	82	18	4	4	19	54	12	9	14	31	13	9	4	1	0	5	3	9

[A] 1 no answer [B] 4 no answer [C] 1 no answer [D] 1 no answer [E] 1 no answer [F] 3 no answer [G] 1 no answer [H] 1 no answer [I] 1 no answer

[J] 2 no answer [K] 1 no answer [L] 1 no answer

TABLE IV

INFORMATION ON UNDERGRADUATE COURSE AREAS IN WHICH BUSINESS GAMES UTILIZED, AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1962

Subject area	Total number of courses	Number of different courses	Required courses	Elective courses	Year offered					Percentage of course time devoted to gaming									
					1	2	3	4	3 or 4	<5	6-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Accounting	5	4	4	1	0	2	1	2	0	0	4	1	0	0	0	0	0	0	0	0
Business policy	21	1	12	9	0	0	0	18	3	1	2	5	5	3	3	0	1	0	0	1
Finance	1	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
Management																				
General	8	7	7	1	0	1[A]	1	4	2	2	2	0	3	0	0	0	0	0	1	0
Production	9	5	7	2	0	1	2	4	2	1	5	1	2	0	0	0	0	0	0	0
Personnel	3	3	2	1	0	0	0	3	0	0	1	0	1	1	0	0	0	0	0	0
Subtotal	20	15	16	4	0	2	3	11	4	3	8	1	6	1	0	0	0	0	1	0
Marketing																				
General	11	4	9	2	0	1	1	7	2	3	4	2	1	0	0	0	0	1	0	0
Special	6	4	1	5	0	0	0	4	2	2	2	0	0	0	1	0	0	1	0	0
Subtotal	17	8	10	7	0	1	1	11	4	5	6	2	1	0	1	0	0	2	0	0
Miscellaneous	12	9	3	9	2	0	2	7	1	3	2	4	0	1	1	0	0	0	0	1
Total	76	38	45	31	2	5	7	50	12	12	22	14	12	.5	5	0	1	2	1	2

[A]This course could be taken in either the second or the third year.

SOURCE: Dale and Klasson 1964

The remaining subject area, the business policy area, while numerically increasing total courses reported using games from 21 courses in 1962 to 26 courses in 1974, suffered a percentage decrease from representing 28% of all courses in 1962 to 25% of all 1974 courses.

1. Accounting and Finance Courses

A major 1962 survey finding was an almost total lack of management gaming in both the accounting and finance areas [Dale and Klasson 1964, p.10]. A total of 5 accounting courses and 1 finance course were reported in 1962 using management games.

In 1974, the number of accounting courses reported was even less, 3 (representing 3% of all undergraduate courses reported):

Cost Accounting
Introduction to Accounting
Managerial Accounting

The finance subject area, however, showed an increase in the use of management gaming with only one course being reported in 1962 and 11 (9 different) being reported in 1974:[14]

Commercial Bank Management
Corporate Finance
Corporation Finance
Finance (2)
Financial Management (2)
Financial Systems
Investments
Management of Financial Institutions
Managerial Economics

Dale and Klasson felt that the lack of gaming in the accounting and finance areas in 1962 was due to three reasons: First, they felt that neither of these two areas lent themselves well to gaming. Secondly, Dale and Klasson felt that educators in both fields didn't develop specialized

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[14] Numbers in parenthesis following a course title indicate the total number reported with the same title.

functional games[15] for the areas because they saw no need to do so (a reason which needs more explanation). Finally, they attributed the lack of gaming in the accounting and finance areas in 1962 to a general lack of experimentation and availability of appropriate games.

This author feels that Dale and Klasson's above three reasons are somewhat valid for the lack of management games in the accounting and finance areas given a 1962 perspective of the development of management gaming. However, when examining the effect of the past twelve years on the adaptation of gaming in the accounting and finance areas from a 1974 perspective, it is best to take each area and examine it separately.

The accounting area suffered a 40% decrease in the number of courses using games from 1962 to 1974 (5 courses in 1962, 3 in 1974). The small number of courses in both years as well as the decrease in the number of courses from 1962 to 1974 may possibly be attributed to the following reasons:

a. Nature of Accounting as a Subject

By the very nature of accounting, at least on an undergraduate level, the traditional approach in accounting education of laboratory exercises seems one of the only ways (if not the most effective) of learning the basics of having "debits equal credits" and completing an income statement and balance sheet. Basic undergraduate accounting involves primarily "mechanics" and hence is not easily adapted to management gaming which stresses decision-making skills.

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[15] Management games are divided into two basic categories: (1) general management, and (2) functional. General management games deal with decisions related to the overall operations of a simulated business enterprise, while functional games require decision making in only one or two specific aspects of a simulated business enterprise's operation (for example marketing decisions).

b. Recent Trends in Management Game Development[16]

The trend in management game development in general over the past twelve years has been toward the creation of the more profitable, easily marketed and widely usable general management game. Although 3 strictly accounting finctional games were reported in 1974 and none reported in 1962, game developers seem to shy away from developing accounting games which are limited in use. While financial subject matter can be adapted with relative ease to a general management game by including decisions to be made on financial matters (for example, long range capital budgeting), accounting subject matter in general, cannot be adopted to a general management game without great difficulty. Hence, there are just not that many games available that incorporate accounting subject matter.

Examining the finance area, one finds that finance courses using games accounted for only 1% of all undergraduate courses in 1962, while in 1974, they accounted for 11% of all undergraduate courses reported. This increase of the use of management gaming in the finance area from 1962 to 1974 may possibly be attributed to the following three reasons:

a. Increased Importance of Financial Subject Matter

Over the past twelve years, by examining the 1974 survey results, there appears to be an increased emphasis of finance related subject matter in undergraduate business curriculums.

b. Adaptability of Financial Subject Matter to Gaming

Management gaming in general, attempts to develop decision-making ability. Financial education including such topics as investment management, banking, capital budgeting and other related topics, by its very

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[16]Recent trends in gaming development and specific games will be discussed later.

nature, demands decision-making ability. Hence, financial subject matter adapts with relative ease to management gaming.

c. Availability of Games

While functional games can and have been developed for the financial area, many general management games are easily reoriented to emphasizing decisions of a financial nature.

2. Business Policy Courses

The 1974 survey revealed 26 undergraduate business policy courses (6 different courses) using management games. These 26 courses represented 25% of the total number of undergraduate courses reported:

Administrative Policy
Business Policy (17)
Organizational Problems
Policy (5)
Policy and Administration
Policy Formulation

The 1974 survey results indicated that the use of gaming in the business policy area had not changed significantly from 1962. In 1962, 21 business policy courses used games. These 21 courses represented a slightly greater percentage of the total number of undergraduate courses reported in 1962 (28%), than did the 26 business policy courses using games in 1974 represent of total undergraduate courses (25%).

3. Management Courses

Twenty-three management courses (19 different courses) were reported in 1974 which used games, representing 22% of total undergraduate courses reported. Management courses in 1962 (20 total courses, 15 different) represented 26% of total undergraduate courses reported in 1962.

The management courses were divided into three categories: (1) general management, (2) production management, and (3) personnel management.

a. General Management Courses

Sixteen courses (13 different courses) were categorized as general management and represented 70% of all management courses:

Administration
Business Enterprises
Decision Making
Executive Action Simulation
Executive Decision Making
Integrated Business Decision Making
Management (2)
Management Decision Simulation (2)
Management Policy
Management Principles
Principles and Introduction to Business
Principles of Management (2)
Problems in General Management

These 16 general management courses are fairly well divided into two areas, related business topics and various aspects of management.

b. Production Management Courses

Production management, the second category of management courses, accounted for 26% of all management courses reported in 1974. A total of 6 courses were reported in this area (5 different courses):

Problems in Production
Production
Production and Operations Management (2)
Production Management
Production Planning and Control

c. Personnel Management Courses

The third category of management courses was personnel management. Only one course in this category was reported in 1974:

Personnel Technology

Although the total number of all management courses reported in 1974 was only 3 greater than the number reported in 1962, significant shifts occurred as to the percentage of management courses in each category. The most notable shift was that in 1962, the general management category accounted for 40% of all management courses, while in 1974, the

general management category accounted for 70% of all management courses. The two other categories declined as percentages of total management courses reported. Production management courses decreased from 45% of all management courses in 1962 to 26% in 1974, and personnel management courses decreased from 15% in 1962 to 4% in 1974.

The increase in the number of general management courses using games may be explained by the fact that the greater proportion of games reported in 1974 were of the "general management" type (as opposed to being functional) and therefore easily used by general management courses.

Explaining the decrease in the use of management games in the production and personnel management categories is more difficult than explaining the increased use of games in the general management category. It is speculated that decreases (or increases) in the number of courses using games in a particular subject area or category is not necessarily only related to a subject's adaptability to gaming or to the availability of appropriate games. Rather, it is felt by this author that when examining the change in a subject area's use of management games, the following factors must also be considered:

a. The so-called "drift" or "trend" of management education over the years with certain subject areas gaining in importance as a part of business education and others decreasing in importance.

b. The lack or over abundance of qualified professors in any given course area which invariably affects the number of courses offered in that area.

c. Student interest in particular course areas, i.e. popularity of certain courses (applicable to elective courses only), affecting administrative decisions of whether or not to offer a given course.

4. Marketing Courses

The marketing subject area suffered the greatest decrease in the use of management gaming of the six subject areas from 1962 to 1974.

Seventeen marketing courses reported using management games in 1962 (accounting for 22% of all 1962 undergraduate courses). This compares to only 13 marketing courses reported in 1974, representing 13% of all undergraduate courses using games.

The 13 courses reported in 1974 represented 7 different courses. Twelve courses were categorized as "general" marketing courses, and one was categorized as a "specialized" marketing course.

General Marketing Courses

Basic Marketing
Introduction to Marketing Management
Marketing (4)
Marketing Management (3)
Marketing Principles
Principles of Marketing (2)

Specialized Marketing Courses

Sales Management

The types of marketing courses reported in 1974 are almost identical to those reported in 1962. The majority of all courses reported in both years could be described as just basic introductory marketing courses.

A possible explanation for the decrease in the number of marketing courses using games is similar to the explanation for the increase in finance courses and the decrease in the number of production and personnel management courses. Asside from considering the availability of marketing games or the adaptability of marketing to the gaming technique, the following previously mentioned factors are also relevant:

a. The "drift" or "trend" of management education causing a change in emphasis of certain subject areas over the years.

b. A lack of qualified professors in a given subject area.

c. Student interest in certain subject areas and lack of interest in other areas.

5. Miscellaneous Courses

Miscellaneous courses using management games represented the largest subject category in 1974. Twenty-seven courses (22 different courses) representing 26% of all undergraduate courses were reported in 1974:

Applications of Digital Computers to Problems in the Social Sciences
Business Communication
Business Games
Business Quantitative Analysis
Business Simulation
Decision Mathematics I
Economic Analysis and Economic Policy
Food and Beverage Management
Honors in Business
Integrative Management Simulation
Introduction to Business
Life Insurance
Logistics
Management and Organizational Behavior
Management Game
Operations Management (6)
Organizational Behavior
Physical Distribution
Planning and Control
Qunatitative Analysis for Business
Simulation of Business Enterprise
Transportation

Both numerically and percentage wise, miscellaneous courses using games increased from 1962 to 1974. In 1962, only 12 courses or 16% of all 1962 undergraduate courses were reported, where as in 1974, the 27 courses reported accounted for 26% of all undergraduate courses.

While some of the courses in the miscellaneous category in 1962 were similar to some reported in 1974, the 1974 list included a substantially greater number of quantitatively oriented courses (as far as could be determined by course titles). For example, only one operations research/operations management course was reported in 1962 compared to 6 reported in 1974. Also notable were the two courses of a strictly gaming nature reported in 1974, where none were reported in 1962.

6. Required and Elective Courses

In addition to a specific question on the survey questionnaire regarding whether or not an institution had permanently integrated games into its curriculum, the inclusion of management gaming in required business major courses was another indicator of the degree of integration of gaming.

The 1974 survey revealed that of the 103 undergraduate courses using games that were reported, 82 courses or 80% were required and 18 courses or 17% were elective.[17] This represents a significant increase from the number and percentage of required courses in 1962; 76 courses representing 50% of all undergraduate courses were reported. This fact combined with the fact that a greater percentage of schools in 1974 than in 1962 indicated that they had permanently integrated gaming into their curriculum (when specifically asked) is further evidence of the increased acceptance of gaming over the past twelve years.

Figure 1 reveals that all but one subject area (accounting) showed an increase in the number of required courses using management games from 1962 to 1974. The business-policy area had the greatest number of required courses in 1974, 23 (compared to the management area which had 16 required courses in 1962). The finance area showed the greatest percentage increase in the number of required courses, having none in 1962 and 10 in 1974. The accounting area had the smallest number of required courses in 1974 (2), compared to the finance area in 1962 which had none.

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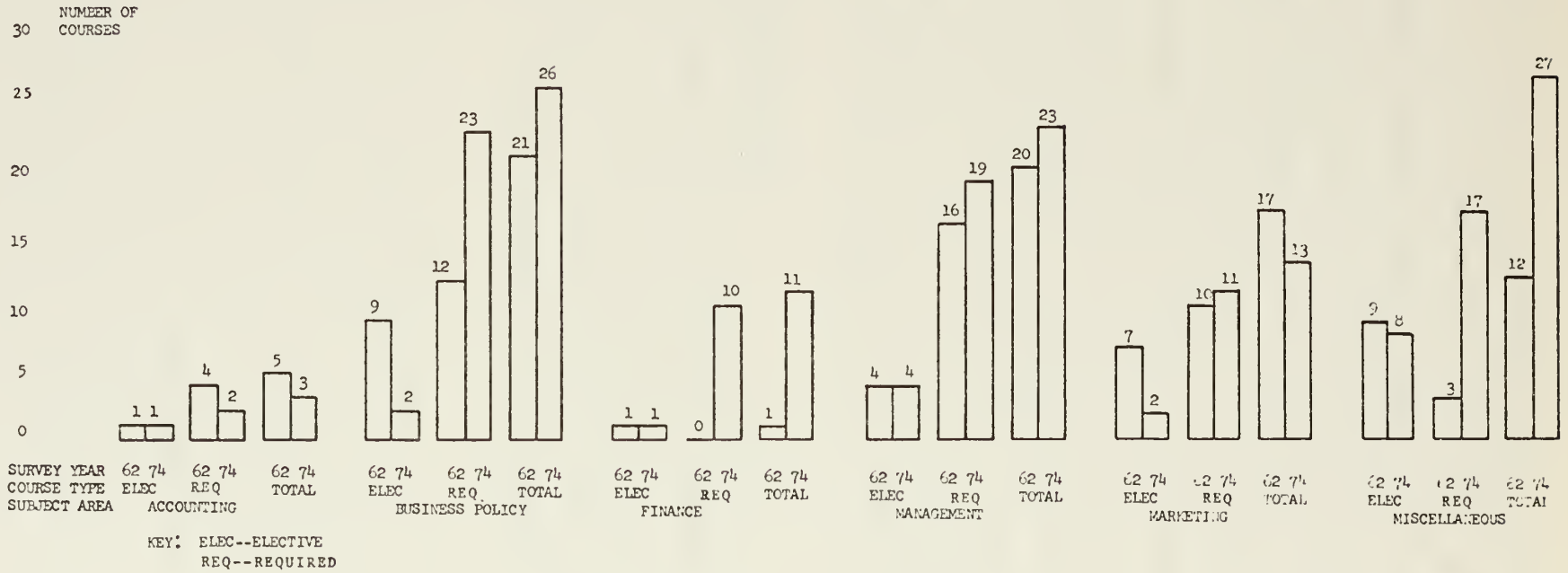
[17] Three courses did not indicate whether or not they were required. In all following occurrences of numerical discrepancies (for example, when percentages do not total to 100%, etc.) either in the text or in a figure, the reason for the discrepancy may be found by consulting an appropriate source table: Table III-Undergraduate Courses, Table VI-Graduate Courses.

FIGURE 1

NUMBER OF REQUIRED AND ELECTIVE UNDERGRADUATE COURSES
IN WHICH MANAGEMENT GAMES UTILIZED, CLASSIFIED BY MAJOR SUBJECT AREA,
AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS
IN 1962 AND 1974



Regarding elective courses, three subject areas, accounting, finance, and management, kept the same number in 1974 as in 1962. The business policy, marketing, and miscellaneous subject areas showed declines in the number of elective courses offered in 1974 compared to 1962. The subject area showing the greatest decline in the number of elective courses which used games was the marketing area. It decreased by 71%, the number of elective courses it had in 1962 (7), to the number it had in 1974 (2). The miscellaneous subject area had the greatest number of elective courses in 1974 (8), compared to the business policy and miscellaneous areas, each which had the greatest number in 1962 (9). The finance and accounting areas each having one elective course both in 1962 and 1974, were the subject areas having the smallest number of elective courses in both years.

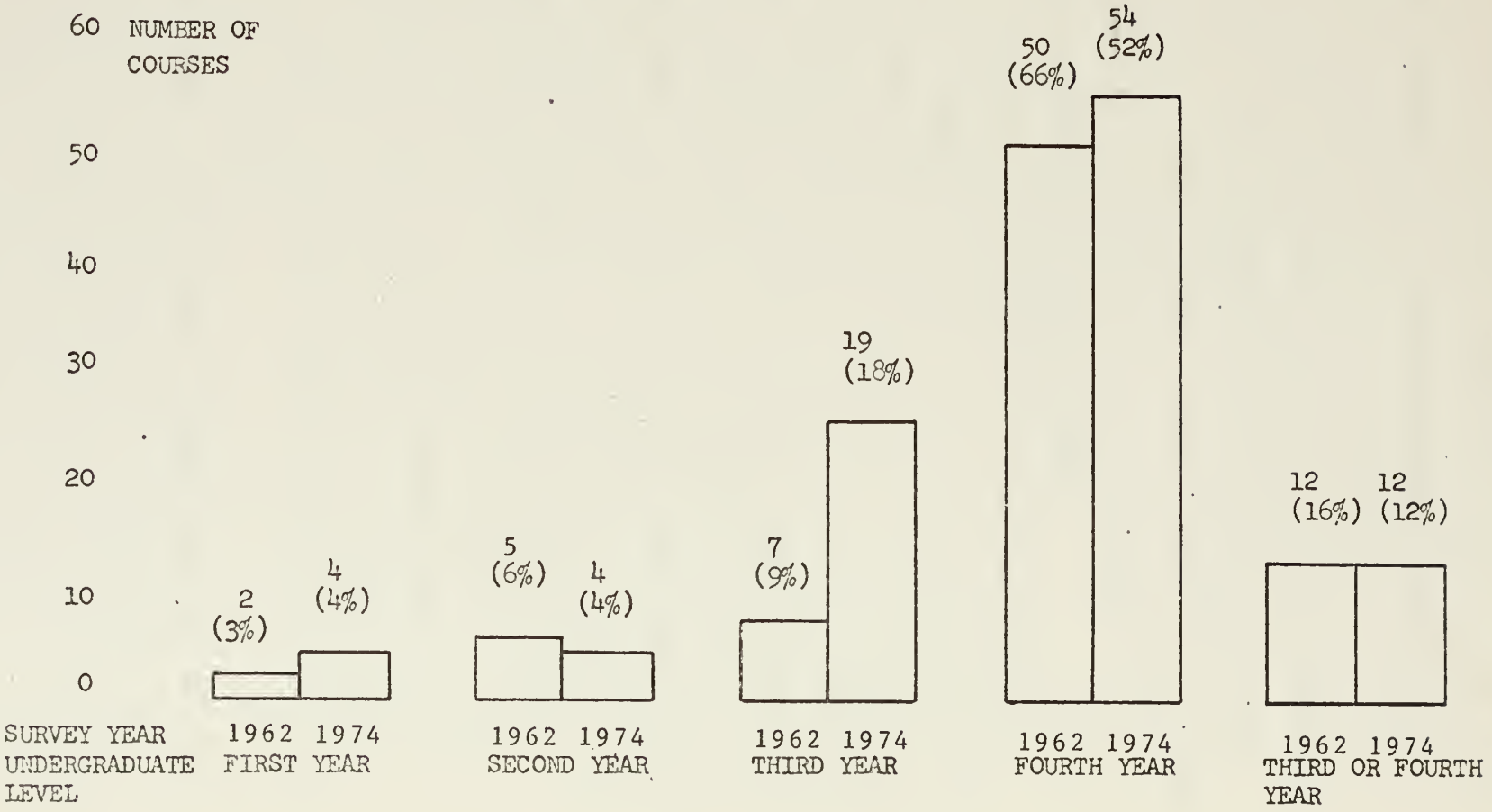
7. Year in Which Courses Taken

Figure 2 reveals that 85 courses or 82% of all undergraduate courses using games in 1974 were offered either in the third year exclusively, the fourth year exclusively or in both the third and fourth years. This represents approximately the same proportion of courses during those two years as in 1962.

Examining the number of courses using games in the third and fourth year individually reveals the following: The increase from 7 courses in 1962 being offered exclusively in the third year, to 19 courses in 1974, represents an increase from 9% to 18% of the respective total courses reported in 1962 and 1974. The number of courses offered exclusively in the fourth year increased from 50 courses in 1962 to 54 in 1974, but represented an actual percentage decrease. The 50 courses in 1962 represented 66% of all courses, while the 54 courses in 1974 represented 52% of all courses.

FIGURE 2

UNDERGRADUATE ACADEMIC LEVEL AT WHICH MANAGEMENT GAMES UTILIZED, AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1962 AND 1974



The number and proportion of courses offered in the first year, or offered in the second year remained approximately the same from 1962 to 1974. The small proportion of courses using games offered during these years is due primarily to the fact that the typical business student takes mainly liberal arts courses during that time and concentrates on his business major courses during the final two years of his undergraduate education (i.e., most business courses are offered during junior and senior years regardless whether or not they use gaming).

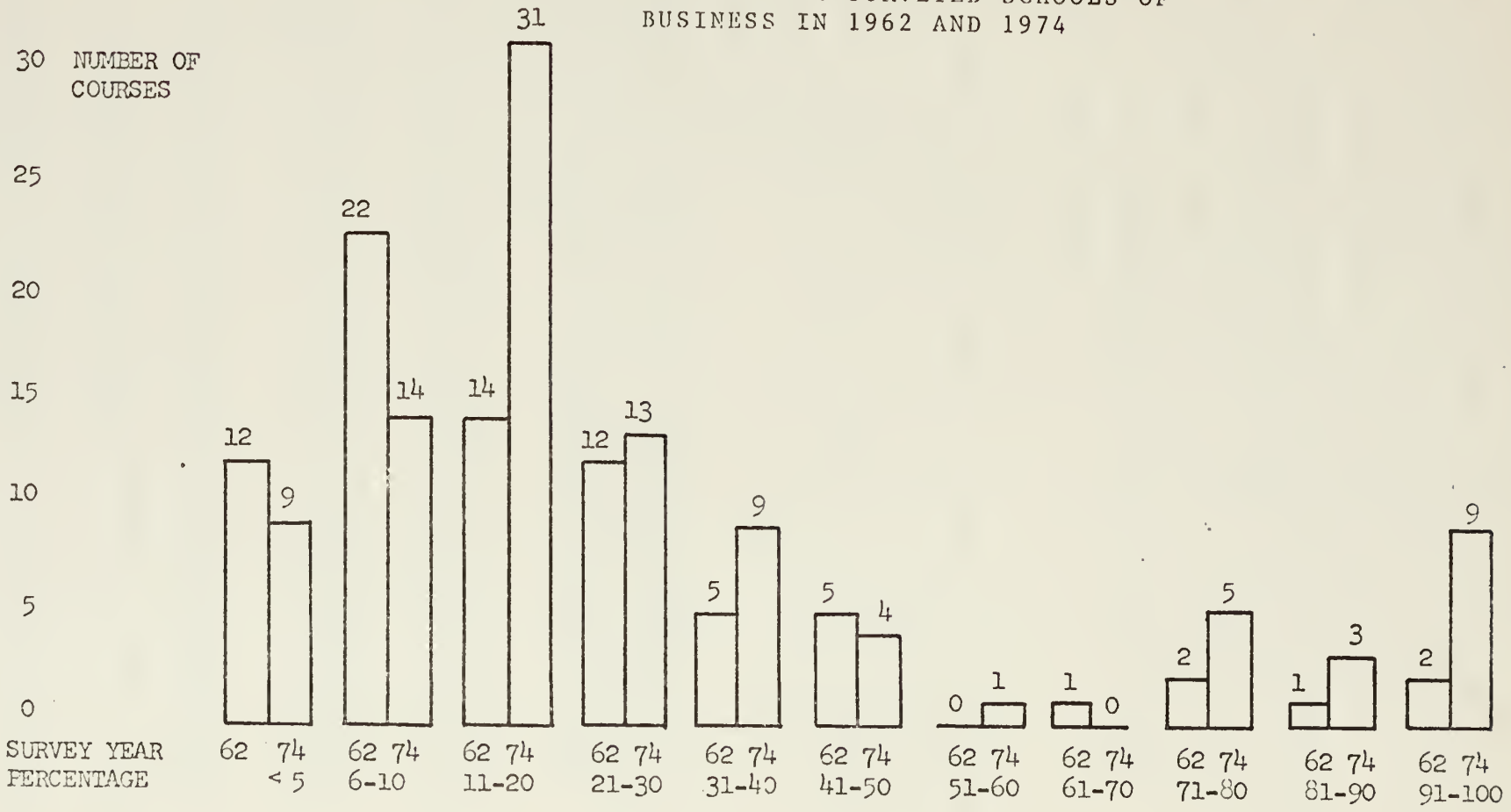
8. Percentage of Course Time Devoted to Gaming

Figure 3 illustrates the percentage of course time devoted to management games in undergraduate schools. The most interesting fact that the 1974 survey revealed in this area was that games were used almost exclusively (91% to 100% of course time) in 9 courses which is close to 10% of all undergraduate courses, compared to only 3% in 1962. Courses using games more than one-half of course time have tripled numerically and doubled proportionately from 1962 to 1974 (6 courses in 1962 representing 8%, 18 courses in 1974 representing 17%). Thirty percent (31 courses) of all courses used games greater than 31% of course time in 1974 compared to 21% of all courses in 1962 which used games almost one-third of course time. The 11% to 21% of course time category was the largest in 1974, accounting for 31 courses or almost one-third of all courses, while in 1962 the largest category was the 6% to 10% of course time category with 22 courses (29% of all courses).

The management area had the highest average percentage of course time devoted to gaming in 1974 (45%) compared to the miscellaneous subject area which had the highest average percentage of course time in 1962 (22%). The course areas with the lowest average percentage of course time devoted to gaming was the accounting area in 1962 (9.5%) and the finance

FIGURE 3

PERCENTAGE OF TOTAL COURSE TIME ALLOCATED TO MANAGEMENT GAMES IN UNDERGRADUATE COURSES, AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1962 AND 1974



area in 1974 (7%). The management area increased its average percentage of course time devoted to gaming the greatest (19% in 1962, 45% in 1974) while the finance area was the only area decreasing its average percentage of course time devoted to gaming (15.5% in 1962, 7% in 1974).

Overall, the average percentage of course time devoted to gaming for all undergraduate courses increased from 18% in 1962 to 31% in 1974. All undergraduate subject areas with the exception of the finance area, have increased the use of management gaming in their courses over the twelve year period, 1962 to 1974.

9. Summary

Table V presents a summary tabulation comparing the undergraduate use of management in gaming in 1974 to that in 1962. Additionally, the following comments summarize the various changes in the use of management gaming on the undergraduate level which have taken place over the twelve-year period, 1962 to 1974:

a. The concept of management gaming on the undergraduate level has gained increased acceptance as an educational technique. This is evidenced by the 36% increase in the number of courses using games and by the increase in the average percentage of course time devoted to gaming for all undergraduate courses from 18% in 1962 to 31% in 1974.

b. Examining the combined factors of number of courses per subject area and average percentage of course time devoted to gaming per subject area, the following comments are relevant:

   (1) The business policy, management, and miscellaneous subject areas used gaming to the greatest extent in 1974 compared to the business policy, management, and marketing areas in 1962.

   (2) The miscellaneous subject area has seen the most dramatic increase of the use of management gaming from 1962 to 1974.

   (3) No one subject area has shown a substantial decrease in the use of gaming from 1962 to 1974.

   (4) The management area used gaming to the greatest extent in 1974 compared to the business policy area which used gaming to the greatest extent in 1962.

TABLE V

SUMMARY COMPARISON OF UNDERGRADUATE UTILIZATION OF MANAGEMENT GAMES IN 1962 AND 1974

SUBJECT AREA	TOTAL NUMBER OF COURSES		SUBJECT AREA COURSES AS PERCENTAGE OF TOTAL COURSES		SUBJECT AREA AVERAGE % OF COURSE TIME DEVOTED TO GAMES	
	1962	1974	1962	1974	1962	1974
Accounting	5	3	7%	3%	9.5%	33%
Business Policy	21	26	28%	25%	21.0%	30%
Finance	1	11	1%	11%	15.5%	7%
Management	20	23	26%	22%	19.0%	45%
Marketing	17	13	22%	13%	13.0%	21%
Miscellaneous	12	27	16%	26%	22.0%	33%
Total	76	103	100%	100%	-----	---
	Average Percentage of Course Time Devoted to Gaming for All Courses				18%	31%

(5) The accounting and finance areas used management games the least both in 1962 and in 1974.

c. The percentage increase of required courses using games from 50% of all courses using games in 1962 to 80% of all courses using games in 1974, is evidence of increased integration of management games in undergraduate business curriculums.

d. As in 1962, the majority of undergraduate courses using management games in 1974, used them in the third or fourth year.

C. GRADUATE COURSES[18]

Table VI presents a tabulation of data regarding the use of management games in graduate level courses in 1974 classified according to (1) subject area[19], (2) whether or not a course was required, (3) year in which course offered, and (4) percentage of total course time devoted to gaming. Table VII presents the same tabulation of data regarding graduate use of management games as collected by Dale and Klasson in 1962.

A total of 71 graduate courses using management games were reported in 1974. These 71 graduate level courses represented 48 different courses (as far as could be determined from course titles). The 71 graduate courses reported in 1974 represented a decrease of 4 courses (a 5% decrease) from the number of graduate courses reported in 1962 that used games (75 courses). However the 48 different courses of the 71 total courses in 1974 represented a 66% increase over the 29 different courses of the 75 total courses in 1962. This seems to suggest that while the number of graduate courses using games has stayed approximately the same from 1962 to 1974, the scope and diversity of the courses in which games were used has increased substantially.

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[18] For a detailed listing of individual graduate courses using management games, see Appendix C.

[19] The six subject areas used to classify undergraduate courses were used to classify graduate courses. For an important discussion of an alternative course classification method in the management and miscellaneous areas, see Appendix D.

TABLE VI

INFORMATION ON GRADUATE COURSE AREAS IN WHICH MANAGEMENT GAMES UTILIZED, AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1974

Subject area	Total number of courses	Number of different courses	Required courses	Elective courses	Year offered 1	2	1 and/or 2	Percentage of course time devoted to gaming <5	6-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Accounting	2	0	2	0	2	0	0	0	0	1	0	0	1	0	0	0	0	0
Business Policy	19	6	16	3	[A]2	15	1	0	4	3	3	4	2	0	0	1	0	2
Finance	11	10	3	8	2	9	0	[B]0	5	2	1	0	0	0	0	1	0	1
Management																		
General	10	8	8	2	[C]4	5	0	[D]1	0	1	1	3	0	0	0	0	0	3
Production	2	2	2	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0
Personnel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	12	10	10	2	5	6	0	2	0	2	1	3	0	0	0	0	0	3
Marketing																		
General	5	4	3	2	1	4	0	[E]0	1	2	0	1	0	0	0	0	0	0
Special	1	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Subtotal	6	5	3	3	1	5	0	1	1	2	0	1	0	0	0	0	0	0
Miscellaneous	21	17	[F]10	9	10	9	2	[G]3	4	3	0	1	2	1	0	0	0	6
Total	71	48	44	25	22	44	3	6	14	13	5	9	5	1	0	2	0	12

[A]1 no answer [B]1 no answer [C]1 no answer [D]1 no answer [E]1 no answer [F]2 no answer [G]1 no answer

TABLE VII

INFORMATION ON GRADUATE COURSE AREAS IN WHICH MANAGEMENT GAMES UTILIZED, AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1962

Subject area	Total number of courses	Number of different courses	Required courses	Elective courses	Year offered			Percentage of course time devoted to gaming										
					1	2	1 and/ or 2	<5	6-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Accounting	1	1	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
Business policy	23	1	17[A]	5	13	8	2	1	4	9	4	2	3	0	0	0	0	0
Finance	1	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0
Management																		
General	12	5	9	3	6	3	3	4	2	0	3	1	1	0	0	0	0	1
Production	5	3	2	3	1	3	1	3	1	1	1	0	0	0	0	0	0	0
Personnel	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	18	9	12	6	8	6	4	7	3	1	4	1	1	0	0	0	0	1
Marketing																		
General	15	5	11	4	5	8	2	3	5	4	0	0	2	0	0	0	0	1
Special	4	3	1	3	1	2	1	0	1	1	1	0	1	0	0	0	0	0
Subtotal	19	8	12	7	6	10	3	3	6	5	1	0	3	0	0	0	0	1
Miscellaneous	13	9	8	5	4	6	3	5	0	1	2	2	0	0	1	0	0	2
Total	75	29	49	25	32	30	13	16	14	17	11	5	7	0	1	0	0	4

[A] 1 no answer

SOURCE: Dale and Klasson, 1964

Together, three subject areas accounted for 74% of all graduate courses reported in 1974 (which were the same three subject areas which accounted for approximately three-fourths of all undergraduate courses using games in 1974). The three graduate areas included miscellaneous (21 courses), business policy (19 courses), and management (12 courses). In 1962, the three graduate subject areas accounting for approximately three-fourths of all graduate courses reported were business policy (23 courses), marketing (19 courses), and management (18 courses). It is interesting to note that in both the undergraduate and graduate levels, the miscellaneous subject area in 1974 replaced the marketing area in 1962 as one of the three dominant subject areas using games.

The accounting, finance, and miscellaneous subject areas increased their percentage shares of total graduate courses reported from 1962 to 1974. The finance area saw the greatest increase in the number of courses using gaming from only one course in 1962 to 11 in 1974. This increased its percentage share of graduate courses from 1.3% in 1962 to 15% in 1974. In 1974, the miscellaneous area with 21 courses was the largest category, while the business policy category with 23 courses was the largest in 1962.

Three subject areas decreased their percentage share of graduate courses reported from 1962 to 1974, business policy, management, and marketing. As was true with the undergraduate marketing area, the graduate marketing area suffered the greatest decrease in the number of courses using games. In 1962, 19 marketing courses representing 25.3% of all graduate courses were reported, while in 1974, there were only 6 marketing courses accounting for 8% of all graduate courses. The accounting and finance areas each with one course were the smallest areas in 1962, but in 1974, only the accounting area was the smallest, having 2 courses.

1. Accounting and Finance Courses

Only one accounting course on the graduate level was reported using games in 1962. Nineteen seventy-four saw this number increase to 2 courses:

Accounting Analysis For Decision Making
Accounting For Management

The two courses reported in 1974 represented 3% of all graduate courses reported, while the one course in 1962 represented 1.3% of all graduate courses.

The number of graduate accounting courses reported in 1974 was one less than the number of undergraduate courses in 1974. However, as far as could be determined from course titles, the graduate courses (as would be expected) were of a more advanced nature.

Of the six subject areas on a graduate level, the finance area showed the greatest increase in the number of courses using games. While only one course was reported in 1962, 11 (10 different courses) were reported in 1974:

Banking
Capital Budgeting
Commercial Bank Management
Corporate Finance
Financial Institutions
Financial Management
Financial Markets
Investment Management
Management of Financial Institutions (2)
Portfolio Management

The finance area by increasing by 10 the number of courses offered from the number offered in 1962, increased its percentage share of graduate courses the most from accounting for 1.3% of all graduate courses in 1962 to 15% in 1974.

The number of graduate level finance courses was the same as the number of undergraduate courses, as well encompassing similar types of topics.

As Dale and Klasson concluded about undergraduate level accounting and finance courses, graduate level accounting and finance courses as well, had not adopted gaming as of 1962. They gave as their reason for this the fact that educators did not feel that games were suitable for use in these two areas [Dale and Klasson 1964, p.23].

As was done with the undergraduate counterparts of these two subject areas, their use of gaming will be examined separately.

Although the number of graduate accounting courses using games increased from one in 1962 to two in 1974, the use of gaming in this area is negligible. This limited use of gaming in this area may be attributed to the same reasons previously discussed for the limited use of gaming in the undergraduate accounting area:

a. "Mechanical" nature of accounting as a subject.

b. Recent trends in management game development, with greater emphasis in developing the more widely usable general management game.

Graduate level finance courses, however, increased from only one course in 1962 to 11 in 1974. Possible reasons for the increase in the number of graduate level courses using games are the same as those previously postulated for the increase in the number of undergraduate finance courses:

a. An apparent increase in the importance of finance related subjects in MBA curriculums over the past twelve years (1962 to 1974).

b. In general, the adaptability of financial subject matter to gaming.

c. Increased development of "functional" finance management games coupled with the development of many general management games easily oriented to stressing decisions of a financial nature.

Other factors affecting the use of management gaming in both areas would include (1) the lack or over abundance of qualified professors in a given subject area, affecting the number of courses offered in the area,

and (2) student interest in a given area's elective courses, affecting administrative decisions of whether or not to offer a given course.

2. Business Policy Courses

Nineteen seventy-four survey respondents reported a total of 19 courses (6 different courses) using games in the business policy subject area. These 19 courses accounted for 27% of all graduate courses, and included the following:

Administrative Policy
Administrative Seminar
Business Policy (13)
Business Policy and Performance Simulation
Management Problems
Policy (2)

The 19 courses reported in 1974 represented a decrease from the 23 business policy courses using games in 1962 which accounted for 31% of all 1962 graduate level courses using games.

Nineteen seventy-four graduate level business policy courses reported were similar to those reported in the undergraduate level in 1974, as well as similar to 1962 graduate level business policy courses.

3. Management Courses

In 1974, 12 courses (8 different courses) in the graduate level management area reported the use of games, representing 17% of all graduate courses. This was a decrease from the 18 courses reported in 1962 which represented 24% of all graduate courses then. The same three categories of management courses used in undergraduate classification were used for graduate level classification: general management, production management, and personnel management.

a. General Management Courses

The majority of management courses (83%) were in the general management category (10 total courses, 8 different courses):

Conceptual Issues in Management
Management
Management Decision
Management Decision Making (3)
Management of Organizations
Management Simulation
Problems in General Management
Small Business Management

In comparison to 1962 graduate level general management courses that were reported, the 1974 courses stressed many varied aspects of management theory, while the 1962 courses stressed administrative theory only. The 12 graduate level general management courses in 1962 represented two-thirds of all management courses reported.

In comparison to 1974 undergraduate general management courses, the 1974 graduate level courses stressed similar varied aspects of management theory. The 1974 graduate level general management courses represented a somewhat greater proportion of all management courses than did the undergraduate general management courses.

b. Production Management Courses

Only 2 courses in the management subject category were in the production category, representing 17% of management courses reported:

Production Management
Production Planning

In 1962, 5 graduate level production management courses representing 28% of all management courses were reported. These courses were similar in nature to 1974 graduate level production management courses.

Nineteen seventy-four undergraduate level production management courses, in comparison, represented 26% (6 courses) of all management courses. In 1974, courses on both the graduate and undergraduate levels were similar in production management topics covered.

c. Personnel Management Courses

No personnel management courses were reported on the graduate level in 1974. One course in this area was reported in the graduate level in 1962, and in the undergraduate level in 1974.

In summary, graduate management courses using games as reported in 1974, experienced little change in comparison to 1962 graduate level management courses and 1974 undergraduate level management courses with regard to (1) total number of courses, (2) distributions of courses among the three categories, general management, production management, and personnel management, and (3) nature of courses in each category (as far as could be determined from course titles).

4. Marketing Courses

As was true in the undergraduate level, the marketing subject area on the graduate level saw the greatest decrease in the number of courses using games of the six subject areas from 1962 to 1974. Nineteen courses (8 different courses) representing 25.3% of all graduate courses using games were reported in 1962, while in 1974, only 6 courses (5 different courses) were reported, accounting for 8% of all graduate courses. Of the 6 courses listed below, 5 were categorized as "general" marketing courses and one was categorized as a "specialized" marketing course:

General Marketing Courses

Basic Marketing
Graduate Seminar in Marketing
Marketing (2)
Marketing Theory

Specialized Marketing Courses

Marketing in the Public Sector

In comparison, undergraduate marketing courses in 1974 were more than double the number on the graduate level. As far as could be determined

from course titles, 1974 graduate marketing courses were no more advanced than 1974 undergraduate marketing courses. Graduate marketing courses in 1962, however were more advanced in nature than their 1974 counterparts.

The reasons for the decline in the number of graduate marketing courses using games are the same as those reasons postulated for the decline in the number of undergraduate marketing courses using games:

a. The "drift" or "trend" of management education causing a change in emphasis of certain subject areas over the years.

b. A lack of qualified professors in a given subject area.

c. Student interest in some subject areas and lack of interest in others.

5. Miscellaneous Courses

The miscellaneous subject area on the graduate level, as was the case on the undergraduate level also, was the subject area with the greatest number of courses in 1974. Twenty-one graduate level courses (17 different courses) were reported that used games:

Analysis of Logistical Systems
Applications of Digital Computers to Problems in the Social Sciences
Applications of Quantitative Models
Applied Decisions II
Business Operations Analysis
Decision Models
Economic Analysis and Economic Policy (2)
Information Systems
Integrative Management Simulation
International Marketing and International Finance
Life Insurance
Management Game (3)
Management Gaming
Mathematical Decision Methods
Mergers and Acquisitions
Operations Management (2)
Organizational Behavior

The above 21 courses represented 30% of all graduate level courses reported compared to the 13 miscellaneous courses in 1962 representing 17.3% of all graduate courses. While the courses reported in 1962 were

highly specialized and had a definite research orientation, the graduate level courses in 1974 were more diversified with a quantitative orientation.

Compared to the undergraduate miscellaneous courses using games in 1974, the graduate level miscellaneous courses in 1974 represented a slightly greater proportion of all graduate courses (30%). Miscellaneous courses on the undergraduate level accounted for 26% of all undergraduate courses. Both the graduate and the undergraduate miscellaneous courses using games in 1974 were diversified and quantitative in nature.

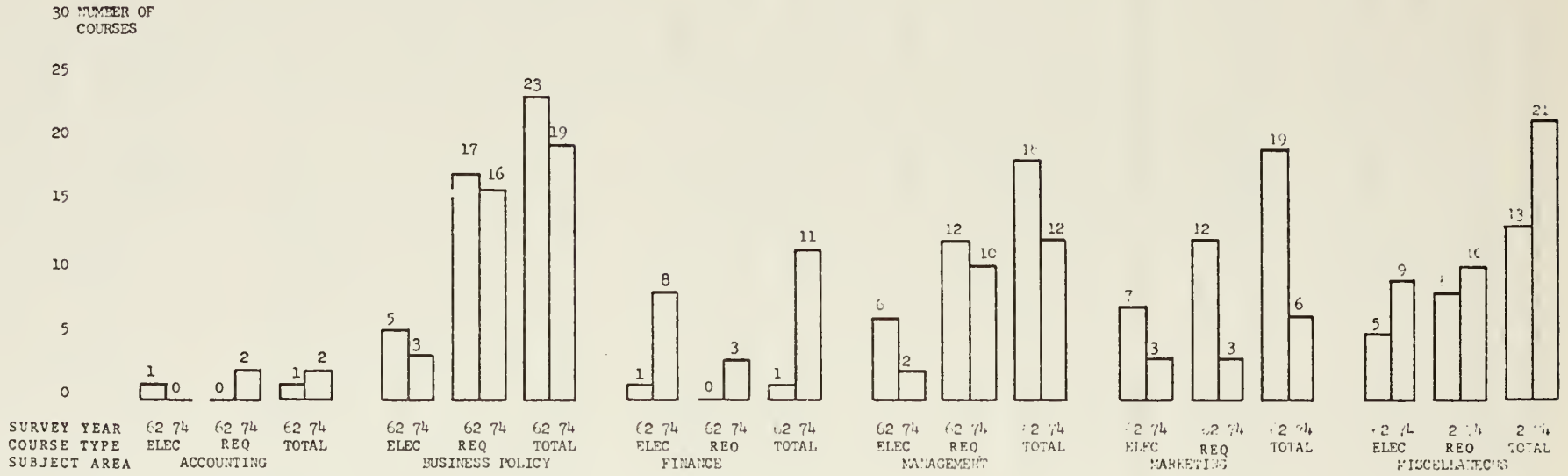
6. Required and Elective Courses

As previously mentioned, the number of required and elective courses using games was another indicator of the degree of integration of management games besides a specific question on the survey questionnaire.

In the graduate level, no real changes occurred in the distribution of required and elective courses using games. There were 44 required and 25 elective courses reported in 1974 compared to 49 required and 25 elective courses in 1962. In 1974, the 44 required courses accounted for 62% of all courses and the 25 elective courses accounted for 35%. Percentages were almost identical for 1962 required and elective courses. Comparing the distributions of required and elective courses on the graduate level in 1962 and 1974 to the distribution of 1974 undergraduate courses, suggests greater integration of management gaming on the undergraduate level. The percentage of required courses of the 1974 undergraduate courses was 80%.

Examining Figure 4 reveals that in 1974, three subject areas saw increases in the number of required courses from the number in 1962:

FIGURE 4
NUMBER OF REQUIRED AND ELECTIVE GRADUATE COURSES IN WHICH MANAGEMENT GAMES UTILIZED, CLASSIFIED BY MAJOR SUBJECT AREA, AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1962 AND 1974



accounting, finance, and miscellaneous. The finance area increased by the greatest number, having no required courses using games in 1962, and 3 in 1974. The business policy area had the greatest number of required courses of all subject areas both in 1962 (17 courses) and in 1974 (16 courses).

The business policy, management and marketing areas showed decreases in the number of required courses from 1962 to 1974. The marketing area, by far, had the greatest decrease, having 12 required courses in 1962 and only 3 in 1974. The accounting area had the smallest number of required courses in 1974 (2 courses), compared to the accounting and finance areas each which had the smallest number (none) in 1962.

Regarding elective courses, two subject areas showed increases in the number offered from 1962 to 1974: finance, and miscellaneous. The finance area had the greatest increase, having only one elective course in 1962 and 8 in 1974. The miscellaneous area had the greatest number of elective courses in 1974 (9) compared to the marketing area which had the greatest number (7) in 1962.

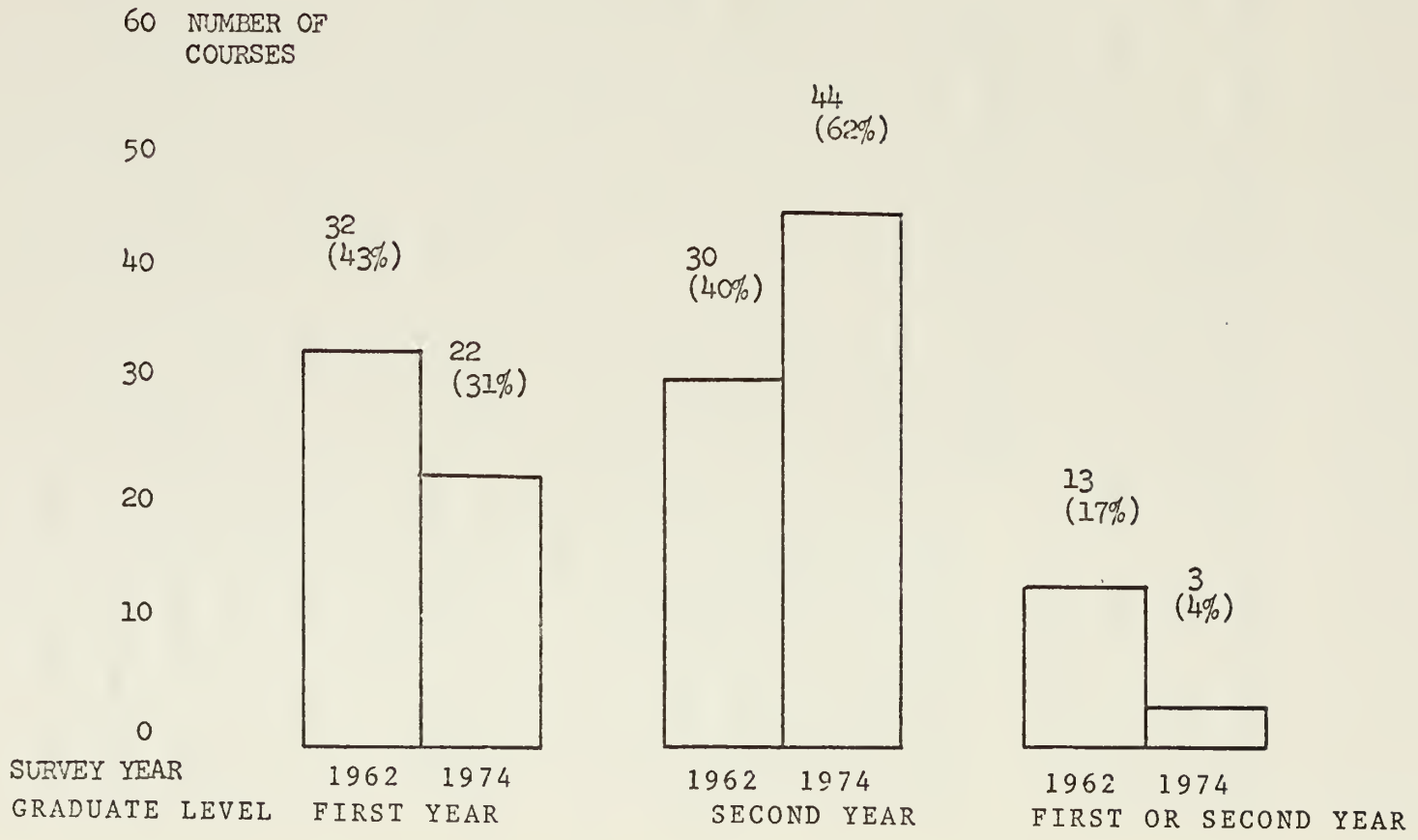
The accounting, business policy, management and marketing areas all suffered decreases in the number of elective courses using games from 1962 to 1974. The management and marketing areas showed the greatest decreases, each decreasing by a total of 4 elective courses from 1962 to 1974. The accounting area had the smallest number of elective courses in 1974 (none), while the accounting and finance areas had the smallest number in 1962, one each.

7. Year in Which Courses Taken

Figure 5 illustrates the academic level at which graduate courses were used in 1974. The figure in general, shows a definite shift in the years in which games were used on the graduate level from 1962 to 1974.

FIGURE 5

GRADUATE ACADEMIC LEVEL AT WHICH MANAGEMENT GAMES UTILIZED, AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1962 AND 1974



While in 1962, a slight majority of courses used games in the first year, 1974 showed that a substantial majority of courses used games in the second year. The combination of the decrease in the number of courses using games in the first year, and of the decrease in the number of courses offered in either the first year or the second year from 1962 to 1974, resulted in the fact that in 1974, the majority of courses using games were in the second year.

In 1974, courses using games in the first year accounted for 31% of all graduate courses, in the second year, 62% and in either the first or second year, 4%. The percentages for 1962 were 43%, 40%, and 12%, for the first, second, and either first year or second year respectively.

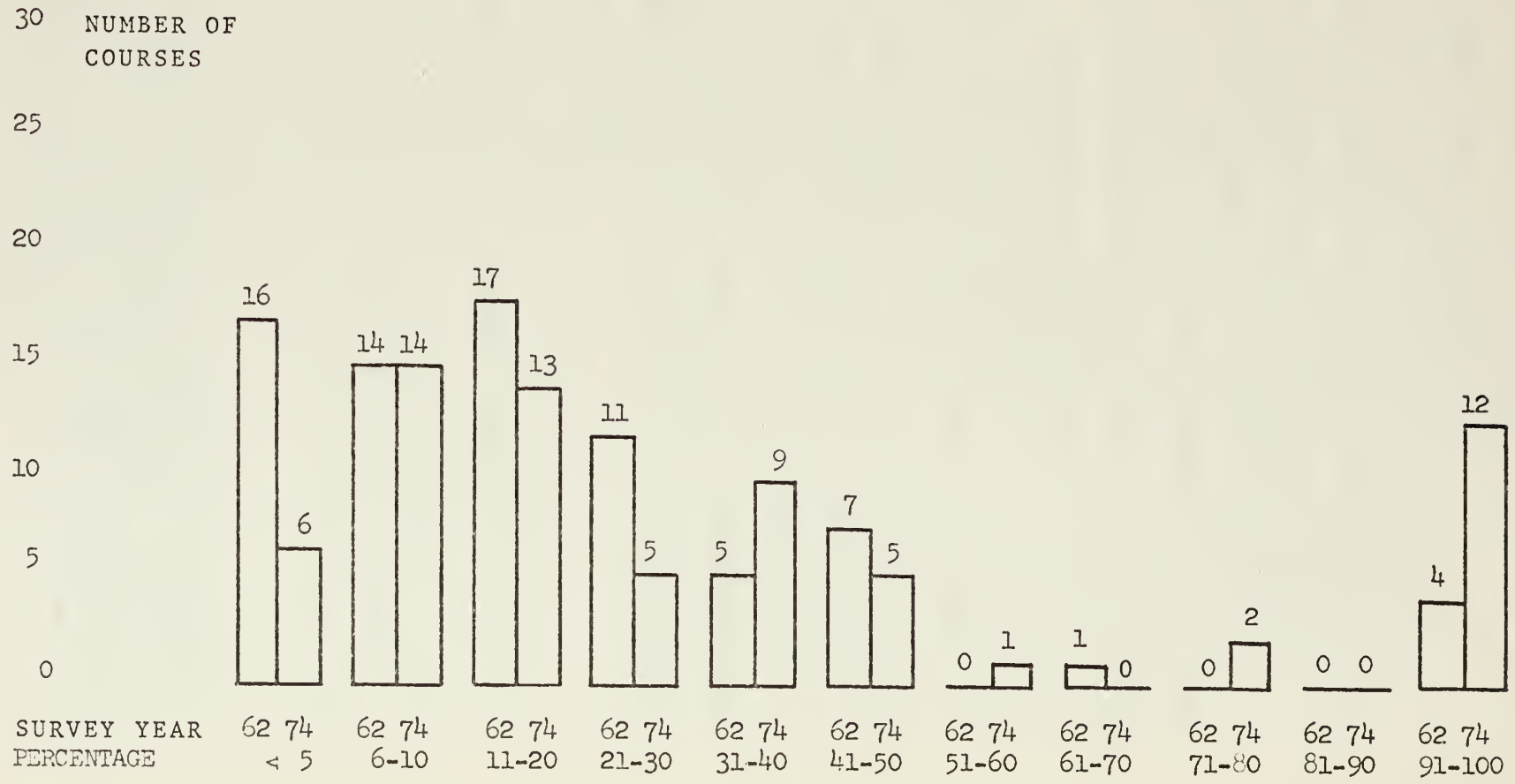
8. Percentage of Course Time Devoted to Gaming

Figure 6 portrays the percentage of graduate course time devoted to management gaming. The 1974 survey revealed that the use of games almost exclusively (91% to 100% of course time) on the graduate level has tripled numerically and percentage wise from 1962 to 1974 (4 courses in 1962 representing 5% of all courses, 12 courses in 1974 representing 17%). While only 7% of all graduate courses in 1962 used games for more than one-half of course time (greater than 51%), this proportion was 21% in 1974. The number of graduate courses using games for almost one-third of course time (greater than 31% of course time) increased from 17 courses (23% of all courses) in 1962 to 29 courses (41% of all courses).

The 6% to 10% of course time category had the greatest number of courses in 1974, while the 11% to 20% category had the greatest number in 1962. At first glance, this would seem to indicate a decrease in percentage of course time devoted to gaming, however, a closer examination of the data reveals that while in 1962, the percentage of courses using

FIGURE 6

PERCENTAGE OF TOTAL COURSE TIME ALLOCATED TO MANAGEMENT GAMES IN GRADUATE COURSES, AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1962 AND 1974



games greater than 21% of course time was only 37% of all courses, in 1974, 54% of all courses used games greater than 21% of course time.

On the graduate level, the miscellaneous subject area had the highest average percentage of course time devoted to gaming both in 1962 (31%) and in 1974 (42%). The subject area with the lowest average percentage of course time devoted to gaming was the finance area (8%) in 1962 and the marketing area (15%) in 1974. The management area increased its average percentage of course time devoted to gaming the greatest (19% in 1962, 41% in 1974). The marketing subject area was the only area to decrease its average percentage of course time devoted to gaming, using gaming an average 21% of course time in 1962, and only 15% in 1974.

Overall, the average percentage of course time devoted to gaming for all graduate courses increased from 22% in 1962 to 35% in 1974, revealing that the average graduate course using games in 1974 used them almost one-third of course time. This compares to the average 1974 undergraduate course using games, which used them 31% of course time, slightly less than its graduate counterpart.

9. Summary

Table VIII presents a summary tabulation comparing the graduate use of management gaming in 1974 to that in 1962. Additionally, the following comments summarize the various changes in the use of management gaming on the graduate level which have taken place over the twelve-year period, 1962 to 1974:

a. The concept of management gaming on a graduate level has gained increased acceptance as an educational technique, evidenced primarily by the increase in the average percentage of course time devoted to gaming of all graduate courses (22% of course time in 1962, 35% in 1974). Although the total number of graduate courses using games decreased from 1962 to 1974, gaming has spread through a wider variety of graduate courses.

TABLE VIII

SUMMARY COMPARISON OF GRADUATE UTILIZATION OF MANAGEMENT GAMES IN 1962 AND 1974

SUBJECT AREA	TOTAL NUMBER OF COURSES		SUBJECT AREA COURSES AS PERCENTAGE OF TOTAL COURSES		SUBJECT AREA AVERAGE % OF COURSE TIME DEVOTED TO GAMES	
	1962	1974	1962	1974	1962	1974
Accounting	1	2	1.3%	3%	15.5%	30.5%
Business Policy	23	19	30.8%	27%	21.0%	34.0%
Finance	1	11	1.3%	15%	8.0%	27.0%
Management	18	12	24.0%	17%	19.0%	41.0%
Marketing	19	6	25.3%	8%	21.0%	15.0%
Miscellaneous	13	21	17.3%	30%	31.0%	42.0%
Total	75	71	100%	100%	-----	-----
	Average Percentage of Course Time Devoted to Gaming for All Courses				22%	35%

b. Examining the combined factors of number of courses per subject area and average percentage of course time devoted to gaming per subject area, the following comments are relevant:

(1) The business policy, management, and miscellaneous subject areas used gaming to the greatest extent in 1974, compared to the business policy, management, marketing, and miscellaneous areas in 1962.

(2) The finance area has seen the most dramatic increase in the use of management gaming from 1962 to 1974.

(3) The marketing area was the only area to show a substantial decrease in the use of management gaming from 1962 to 1974.

(4) The miscellaneous area used gaming to the greatest extent in 1974, compared to the business policy area which used it to the greatest extent in 1962.

(5) The Marketing area used management gaming the least in 1974, compared to the finance area which used it the least in 1962.

c. No substantial change occurred from 1962 to 1974 in the number of required and elective graduate courses using games. Both year's surveys revealed that approximately 60% of all courses were required, indicating a moderate degree of integration of management gaming in graduate curriculums.

d. The majority of courses on the graduate level using games were offered in the second year in 1974, compared to the majority in 1962 which were offered in the first year.

III. TYPES OF COMPUTERIZED AND NONCOMPUTERIZED GAMES UTILIZED

A. COMPUTERIZED GAMES

A major survey finding was that the number of computerized games utilized in 1974 was almost three and one-half times the number reported in 1962. Dale and Klasson reported that in 1962, 28 different computerized games were in use, while the 1974 survey revealed that 96 different computerized games were being utilized.

Although the total number of computerized games reported in 1974 was greater than the number in 1962, the distribution between those of the "general management" type and those of the "functional" type remained almost the same over the twelve year period. Of the 96 computerized games in 1974, and of the 28 computerized games in 1962, 57% of each year's games were of the general management classification. Thirty-four percent of the 1974 computerized games and 43% of the 1962 computerized games were of the functional classification.[20]

Of the 96 different computerized games reported in 1974, 23 games were used by two or more schools. These 23 games are listed in Table IX.

The increase in the number of computerized management games from 1962 to 1974 may be attributed to the following four reasons:

1. Increased utilization of computers in undergraduate and graduate business education in general.

2. Computer technology developments leading to easier and less expensive computer use.

3. The above reasons 1 and 2 encouraging game designers to incorporate the computer in their games to provide more realistic and sophisticated business simulations.

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[20]Of the 96 computerized games reported in 1974, 6% were reported as both general management and functional, and 3% were not classified at all.

TABLE IX

COMPUTERIZED GENERAL MANAGEMENT AND FUNCTIONAL MANAGEMENT GAMES MOST FREQUENTLY UTILIZED AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1974

TITLE OF GAME	DEVELOPER AND/OR PUBLISHER	NUMBER OF SCHOOLS
General Management Games		
The Executive Game	Henshaw and Jackson (developers) Richard D. Irwin, Inc. Homewood, Illinois	12
Intop	Thorelli and Grayes (developers) The Free Press of Glencoe, Collier-Macmillan, London, England	6
Integrated Simulation	Smith, Estey, and Vines (developers) South-Western Publishing Co. Cincinnati, Ohio	5
The Business Policy Game	S. Bryan (developer) Michigan State University East Lansing, Michigan	4
Imaginit	Richard Barton (developer) Texas Technological College Lubbock, Texas	4
NYU Management Simulation	New York University New York, New York	4
UCLA Executive Game No. 2	J.R. Jackson (developer) Graduate School of Business University of California-Los Angeles Los Angeles, California	4
University of Iowa Management Simulation IIA	College of Business University of Iowa Iowa City, Iowa	3
The Management Game	McFarlan, McKenney, and Seiler (developers) The Macmillan Co., Collier-Macmillan Ltd. London, England	3

TITLE OF GAME	DEVELOPER AND/OR PUBLISHER	NUMBER OF SCHOOLS
General Management Games (continued)		
SimQ	(Unknown)	3
UCLA Executive Game No. 3	Graduate School of Business University of California-Los Angeles Los Angeles, California	3
Harvard Business Game	Harvard University Boston, Massachusetts	2
Management Decision Simulation	E.W. Martin, Jr. (developer) Richard D. Irwin, Inc. Homewood, Illinois	2
Mansym	R. Schellenberger (developer) Wm. C. Brown Co. Dubuque, Iowa	2
Functional Games		
Marksim	Greenlaw and Kniffin (developers) International Textbook Co. Scranton, Pennsylvania	9
Finansim	Greenlaw and Frey (developers) International Textbook Co. Scranton, Pennsylvania	5
Prosim	Greenlaw and Hottenstein (developers) International Textbook Co. Scranton, Pennsylvania	5
Stanford Bank Management Simulator	Haley and Wiebuhr (developers) Graduate School of Business Stanford University Stanford, California	3
Bank Management Game	Bullock and Dennick (developers) McKinsey and Co., Inc. San Francisco, California	2
Marketing Management Game	(Unknown)	2

TITLE OF GAME	DEVELOPER AND/OR PUBLISHER	NUMBER OF SCHOOLS
Functional Games (continued)		
Marketing Strategy	L. Boone (developer) C.E. Merrill Publishing Co. Columbus, Ohio	2
Michigan State University Loga	Michigan State University East Lansing, Michigan	2
Proman	(Unknown)	2

4. Increased acceptance of management gaming as an educational tool.

B. NONCOMPUTERIZED GAMES

Another major survey finding was the notable decrease in the number of noncomputerized management games in use from 1962 to 1974. While in 1962, a total of 29 noncomputerized games were reported, accounting for greater than half of all games reported, in 1974 only 11 were reported,[21] accounting for 10% of all games reported. Thus, the number of noncomputerized games decreased by greater than 60% in 1974.

The distribution of noncomputerized games between those of the general management type and those of the functional type remained the same from 1962 to 1974. In both years, approximately two-thirds of all noncomputerized games were of the general management type and one-third of the functional type.

The reason for the decrease in the number of noncomputerized games from 1962 to 1974 seems to be directly related to the increased development and use of the computer which has taken place during those 12 years. However, for many smaller business schools, the prohibitive cost of the computer, has caused them to retain some noncomputerized games.

C. DEVELOPMENT OF GAMES

Respondents to the 1974 survey were asked to indicate whether or not the faculty at their respective schools had developed any of the games in use. Of the 69 schools reporting the use of games in 1974, 38 schools (55%) indicated that faculty members were involved in game development and/or modification of existing games. This represents a 52% increase in the number of schools reporting in 1962 that faculty had participated

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[21] See Table X for a listing of noncomputerized games in use in 1974.

TABLE X

NONCOMPUTERIZED GENERAL MANAGEMENT AND FUNCTIONAL MANAGEMENT GAMES UTILIZED AS REPORTED BY SURVEYED SCHOOLS OF BUSINESS IN 1974

TITLE OF GAME	DEVELOPER AND/OR PUBLISHER	NUMBER OF SCHOOLS
General Management Games		
The Business Game	P. Niland (developer) Graduate School of Business Administration Washington University St. Louis, Missouri	1
Business Games-Play One	G. Ardlinger (developer) Harvard Business Review Boston, Massachusetts	1
Harvard Business Game	Harvard University Boston, Massachusetts	1
Name Game	University of Southern California Los Angeles, California	1
3-D	University of Southern California Los Angeles, California	1
Toy Tower	University of Southern California Los Angeles, California	1
UCLA Executive Game No. 2	J.R. Jackson (developer) Graduate School of Business University of California-Los Angeles Los Angeles, California	1
Venture	P. Niland (developer) Graduate School of Business Administration Washington University St. Louis, Missouri	1

TITLE OF GAME	DEVELOPER AND/OR PUBLISHER	NUMBER OF SCHOOLS
Functional Games		
Business Game for Using Accounting Information	Ohio State University Columbus, Ohio	1
Production/Inventory	College of Business Administration University of Cincinnati Cincinnati, Ohio	1
Stock Market Simulation	College of Business Administration Drake University Des Moines, Iowa	1

in game development. Hence, this fact is additional evidence that management gaming as an educational technique has gained increased acceptance over the time period between the 1962 and 1974 surveys.

IV. MISCELLANEOUS DATA AND CONCLUSIONS

A. EVALUATION OF MISCELLANEOUS DATA

1. Miscellaneous Course Use of Games

Four schools indicated that gaming was used in various courses at various levels in addition to naming specific course usage of games. One of those 4 schools mentioned that two management games were used throughout their "basic management block."

Four institutions mentioned that they used games (while not listing specific games) in various diversified areas including accounting, architecture, economics, finance, management, marketing, production management, and statistics. Also, several schools mentioned that they used several simple hand-scored games.

Three schools specifically mentioned that either gaming in general or specific games had been "dropped," and one school mentioned that gaming had not been utilized continuously since 1963.

2. Non-Course Use of Games

Three institutions, Harvard, Oklahoma University, and the University of California-Los Angeles, reported that they used management games in various non-credit executive development programs.

One school, the University of Nevada, has continuously sponsored an "Inter-Collegiate Business Games Weekend" since 1964. Two phases are involved in this competition to see which school's four to six man team can be most "successful" in a simulated business environment. During the first phase lasting four weeks, teams meet separately at their schools and telephone weekly decisions to the University of Nevada. The competition concludes with the second phase where schools meet at the University of Nevada for a weekend of more intensive decision making.

3. Institutions Using Gaming to the Greatest Extent

Three institutions, Ohio State University, the University of Tennessee, and the University of Nevada, decidedly, used management gaming to the greatest extent of 1974 survey respondents.

Ohio State University reported the greatest number of courses using games, eleven. Gaming was used primarily in four areas: accounting, finance, management science, and marketing. The management science area used gaming to the greatest extent.

The University of Tennessee reported the use of games in nine courses, primarily in the production and operations management categories.

The University of Nevada, in addition to sponsoring the previously mentioned management game competition, reported using games in eight courses, primarily in the finance and marketing areas.

4. Gaming Research and Development Activity

Several 1974 survey respondents listed specific comments regarding gaming research and development activities at their schools.

Oklahoma University reported that doctoral research had taken place examining the possibility of using performance in management games as a predictor for executive success.

Two schools reported adapting management games to computer time-sharing systems, Dartmouth College and the University of Toledo. Additionally, Dartmouth College reported that they were in the process of developing what they termed a "super game"; one which was an inter-disciplinary top management game.

California State College-Los Angeles, although not using games in 1974, was in the process of reviewing various games for inclusion in the accounting, management, and marketing areas.

B. CONCLUSIONS

The 1974 survey of the use of management gaming in undergraduate and graduate business education has provided conclusive evidence that in general, over the twelve year period 1962 to 1974, the use of gaming as an educational technique has increased. Although this increase in use is by no means large, the use of management gaming in 1974 is certainly more than "a cautious acceptance of gaming by a small portion of business school academicians" [Dale and Klasson 1964, p.45]. The slow, but steady growth of management gaming is to be expected of an educational technique in the early stages of its development, especially when its development has been affected by advances in computer technology over the same time period.

It is felt that as the technique "matures" and "settles down," time-series data will be able to be obtained to evaluate the validity and effectiveness of the technique.[22] If and when, management gaming can be shown to be a valid and effective educational technique, its use will certainly become more commonplace in business education.

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[22]Reference 13 is one of the most recent examinations of the validity and effectiveness of management gaming.

APPENDIX A

STATISTICAL SIGNIFICANCE OF STATEMENTS COMPARING THE USE OF MANAGEMENT GAMES IN 1962 AND 1974

This thesis which compares the use of management gaming in 1962 and 1974 is based on a sample, which is assumed to be representative of the total population of all American universities and/or colleges that have schools of business or at least business departments.

On the basis of the reference book published in 1973 by Educational Directories, Inc., Patterson's American Education, there are 247 universities and/or colleges in the United States that have schools of business or at least departments of business. Thus, the parent population is $N = 247$ and the sample size is $n = 73$, for the 1974 survey.

For the answer to a particular question, it may be said that the response is a dichotomy (i.e. either "yes" or "no"). If the total population size, N, is large in comparison to sample size, n, the data may be treated as binomial with little loss in accuracy.

The unbiased estimate of the variance of the proportions P and Q where $Q = (1-P)$ is:

$$S_p^2 = \frac{PQ}{(n-1)}$$

and standard error

$$S_p = \sqrt{S_p^2}$$

For example, applying this type of analysis to a "yes" or "no" response:

1974: 69 of 73 or 95% report that management games are being used.

1962: 64 of 90 or 71% report that management games are being used.

What can be said statistically about the 69 count being reported for 1974 ($P = .95$, $Q = .05$)?

For [n > 30]:

$$S_p^2 = \frac{(.95)(.05)}{(73-1)}$$

$$S_p^2 = .00066,$$

and standard error

$$S_p = .0257 .$$

Confidence interval = C.I. = $P \pm (t)(S_p)$ [n > 30].

Thus, for t = 2, i.e. 95% confidence interval:

$$C.I. = .95 \pm (2)(.0257)$$

$$C.I. = .95 \pm .0514$$

$$C.I. \doteq .90 \text{ to } 1.00$$

or,

C.I. = 90% to 100% .

Applying the same arguments; what can be said about the 64 count reported for 1962 (P = .71, Q = .29)?

$$S_p^2 = \frac{(.71)(.29)}{(90-1)}$$

$$S_p^2 = .00231,$$

and

$$S_p = .0481 .$$

$$C.I. = .71 \pm (2)(.0481)$$

$$C.I. = .71 \pm .0962$$

$$C.I. = .61 \text{ to } .81$$

or,

C.I. = 61% to 81% .

Now, it can be said that the mean difference is (.95)-(.71) or 0.24. However, the difference could be as small as (.90)-(.81) or 0.09. Also, the difference could be as large as (1.00)-(.61) or 0.39.

This analysis may also be applied to all other "yes" or "no" responses compared in the 1962 and 1974 surveys to reveal the "statistical strength" of the statements concerning changes in the use of gaming.

APPENDIX B

UNDERGRADUATE COURSES
CLASSIFIED BY MAJOR AREAS OF STUDY,
AS REPORTED BY SCHOOLS UTILIZING MANAGEMENT GAMES

I. Accounting Courses

- A. Cost Accounting
- B. Introduction to Accounting
- C. Managerial Accounting

II. Business Policy Courses

- A. Administrative Policy
- B. Business Policy (17)
- C. Organizational Problems
- D. Policy (5)
- E. Policy and Administration
- F. Policy Formulation

III. Finance Courses

- A. Commercial Bank Management
- B. Corporate Finance
- C. Corporation Finance
- D. Finance (2)
- E. Financial Management (2)
- F. Financial Systems
- G. Investments
- H. Management of Financial Institutions
- I. Managerial Economics

IV. Management Courses

A. General Courses

1. Administration
2. Business Enterprises
3. Decision Making
4. Executive Action Simulation
5. Executive Decision Making
6. Integrated Business Decision Making
7. Management (2)
8. Management Decision Simulation (2)
9. Management Policy
10. Management Principles
11. Principles and Introduction to Business
12. Principles of Management (2)
13. Problems in General Management

B. Production Courses

1. Problems in Production
2. Production

3. Production and Operations Management (2)
4. Production Management
5. Production Planning and Control

C. Personnel Courses

1. Personnel Technology

V. Marketing Courses

A. General Courses

1. Basic Marketing
2. Introduction to Marketing Management
3. Marketing (4)
4. Marketing Management (3)
5. Marketing Principles
6. Principles of Marketing (2)

B. Specialized Courses

1. Sales Management

VI. Miscellaneous Courses

A. Applications of Digital Computers to Problems in the Social Sciences
B. Business Communication
C. Business Games
D. Business Quantitative Analysis
E. Business Simulation
F. Decision Mathematics I
G. Economic Analysis and Economic Policy
H. Food and Beverage Management
I. Honors in Business
J. Integrative Management Simulation
K. Introduction to Business
L. Life Insurance
M. Logistics
N. Management and Organizational Behavior
O. Management Game
P. Operations Management (6)
Q. Organizational Behavior
R. Physical Distribution
S. Planning and Control
T. Quantitative Analysis for Business
U. Simulation of Business Enterprise
V. Transportation

APPENDIX C

GRADUATE COURSES,
CLASSIFIED BY MAJOR AREAS OF STUDY,
AS REPORTED BY SCHOOLS UTILIZING MANAGEMENT GAMES

I. Accounting Courses

- A. Accounting Analysis for Decision Making
- B. Accounting for Management

II. Business Policy Courses

- A. Administrative Policy
- B. Administrative Seminar
- C. Business Policy (13)
- D. Business Policy and Performance Simulation
- E. Management Problems
- F. Policy (2)

III. Finance Courses

- A. Banking
- B. Capital Budgeting
- C. Commercial Bank Management
- D. Corporate Finance
- E. Financial Institutions
- F. Financial Management
- G. Investment Management
- H. Management of Financial Institutions (2)
- I. Portfolio Management

IV. Management Courses

A. General Courses

1. Conceptual Issues in Management
2. Management
3. Management Decision
4. Management Decision Making (3)
5. Management of Organizations
6. Management Simulation
7. Problems in General Management
8. Small Business Management

B. Production Courses

1. Production Management
2. Production Planning

C. Personnel Courses

(none)

V. Marketing Courses

A. General Courses

1. Basic Marketing
2. Graduate Seminar in Marketing
3. Marketing (2)
4. Marketing Theory

B. Specialized Courses

1. Marketing in the Public Sector

VI. Miscellaneous Courses

A. Analysis of Logistical Systems
B. Applications of Digital Computers to Problems in the Social Sciences
C. Applications of Quantitative Models
D. Applied Decisions II
E. Business Operations Analysis
F. Decision Models
G. Economic Analysis and Economic Policy (2)
H. Information Systems
I. Integrative Management Simulation
J. International Marketing and International Finance
K. Life Insurance
L. Management Game (3)
M. Management Gaming
N. Mathematical Decision Methods
O. Mergers and Acquisitions
P. Operations Management (2)
Q. Organizational Behavior

APPENDIX D

IMPLICATIONS OF AN ALTERNATIVE COURSE CLASSIFICATION SYSTEM IN THE MANAGEMENT AND MISCELLANEOUS SUBJECT AREAS

A. INTRODUCTION

In the report on their 1962 survey of the use of management gaming, Dale and Klasson chose to use six subject areas to classify their courses: accounting, business policy, finance, management, marketing, and miscellaneous.

Courses reported in the 1974 survey were also classified into those six subject areas by using course titles only. The placement of courses into a given subject area was attempted to be done on the same apparent basis as Dale and Klasson classified courses in 1962. This was accomplished by "observing" the "types" of courses placed in particular categories as listed in the published report of the 1962 survey.

Courses reported in the 1974 survey were classified as similarly as possible to the way Dale and Klasson classified them in 1962 in order to achieve the best possible comparisons between the 1962 and 1974 surveys.

However, at times, it is difficult to find the justification for placing a particular course in a given subject area when it would seem to as easily belong to another. This is particularly true for courses classified as "general"[23] management or miscellaneous in nature. For example, listed below, are the titles of graduate courses (using games) reported in 1962 and classified by Dale and Klasson as "general" management or miscellaneous:

---

[23]Courses in the management category were sub-categorized as (1) general management, (2) production management, and (3) personnel management.

General Management	Miscellaneous
Administration	Business Economics
Administrative Management (2)	Business Programming and Control
Business Organization and Policy	Business Research
Managerial Decision-Making (2)	C.I.T. Management Game Course
Organization and Administration	Management Science
Seminar in Business Administration	Management Simulation
Seminar in Business Management	Operations Research
Seminar in Management (2)	Quantitative Methods in Business
Survey of Management	Research Seminar
	Seminar (undesignated) (3)
	Special Study

It seems an inadequate analysis to have the miscellaneous subject area to be so large when some of the courses could easily be placed in the "general" management category because the words "management" and "business" are, for the most part, interchangeable. Additionally, it would seem logical to create a new sub-category of management, "quantitative" management to place courses from both the "general" management sub-category and miscellaneous area.[24]

Listed below, is the result of reclassifying courses in the "general" management sub-category and miscellaneous area into three categories, "general" management, "quantitative" management, and miscellaneous:

General Management	Quantitative Management
Administration	Business Economics
Administrative Management (2)	Business Programming and Control
Business Organization and Policy	Management Science
Business Research	Management Simulation
C.I.T. Management Game Course	Managerial Decision-Making (2)
Organization and Administration	Operations Research
Seminar in Business Administration	Quantitative Methods in Business
Seminar in Business Management	
Seminar in Management (2)	
Survey of Management	

[24]It is realized that identification and separation of "quantitative" management courses from "general" management courses has, to a large extent, occurred since 1962, and that this was perhaps the reason Dale and Klasson did not create the "quantitative" management sub-category.

Miscellaneous

Research Seminar
Seminar (undesignated) (3)
Special Study

Listed below is the numerical effect of the reclassification:

Category	Number of Courses by Classification Method: Dale and Klasson	Alternative
Management		
General	12	12
Quantitative	0	8
Production	5	5
Personnel	1	1
Total	18	26
Miscellaneous	13	5

As can be seen from the above table, the number of courses in the miscellaneous area decreases greatly, and that the reclassification is much more representative of the true nature of business courses using management games.

The following is a summary of the impact to this comparative study of reclassifying 1962 and 1974 undergraduate and graduate courses (reported as using management games) in the previously discussed manner.

The summary examines the undergraduate and graduate courses separately. In a given level, the summary is divided into four parts:

Part 1: Lists the 1962 and 1974 courses reported and classified as either "general" management or miscellaneous by the Dale and Klasson classification method and compares them to the alternative classification method including the "general" management, "quantitative" management, and miscellaneous categories.

Part 2: Lists the numerical effect of the reclassification and presents a summary of how the alternative classification method affects the conclusions of the comparative study of 1962 and 1974 use of management gaming.

Part 3: Compares the number of required and elective courses, and average percentage of course time devoted to gaming using

the two course classification methods, and presents a summary of how conclusions in the comparative study regarding these two items are affected by the alternative classification method.[25]

Part 4: Details a revised summary comparison of the utilization of management gaming in 1962 and 1974 as affected by the alternative classification method. This part may be compared to the appropriate summary comparison which was constructed by using the Dale and Klasson course classification method: Table V - Undergraduate, Table VIII - Graduate.

In general, the change in course classification methods reveals that in 1974, on the undergraduate and graduate levels, that (a) the management area used gaming to the greatest extent of the six subject areas, (b) a substantial proportion of management courses were quantitative in nature, and (c) the miscellaneous area used gaming much less than assumed if the Dale and Klasson course classification method is used, and that the area ceased to dominate the six subject areas as a major user of gaming.

B. IMPLICATIONS OF THE ALTERNATIVE COURSE CLASSIFICATION SYSTEM ON THE UNDERGRADUATE LEVEL

1. Part 1 - Course Listings

a. 1962 Courses

General Management (Dale and Klasson classification)

Advanced Management
Basic Management

---

[25]Only Tables IV and VII were available which were summaries of the 1962 data gathered by Dale and Klasson. The original data was not available, however, course titles could be determined as they were listed in the published report of the 1962 survey. This is why 1962 data regarding number of required and elective courses and average percentage of course time devoted to gaming was not examined in light of the alternative course classification method. Courses in 1962 could be changed from one category to another because course titles were available. However, with only Tables IV and VII available, it could not be determined which courses were required or elective or what percentage of course time a particular course used gaming. Hence, for 1962, the effect of the alternative course classification system on these two items could not be examined.

"Year in which course taken" was not broken down by subject area, and therefore not examined in light of the alternative course classification method.

Concepts of Business Management
Managerial Decision Making
Management Policy and Operations Research
Organization and Administration
Principles of Management
Small Business Management

General Management (alternative classification)

Advanced Management
Basic Management
Concepts of Business Management
Honors Course in Business Administration
Introduction to Business (2)
Organization and Administration
Principles of Management
Small Business Management

Quantitative Management (alternative classification)

An Introduction to Computers and Programming Techniques
Automatic Data Processing
Business Economics
Business Simulation
Management Policy and Operations Research
Management Simulation
Managerial Decision-Making
Motor Carrier Operations
Operations Research

Miscellaneous (Dale and Klasson classification)

An Introduction to Computers and Programming Techniques
Automatic Data Processing
Business Economics
Business Simulation
Honors Course in Business Administration
Industrial Traffic Management
Insurance Company Management
Introduction to Business (2)
Management Simulation
Motor Carrier Operations
Operations Research

Miscellaneous (alternative classification)

Industrial Traffic Management
Insurance Company Management

b. 1974 Courses

General Management (Dale and Klasson classification)

Administration
Business Enterprises

Decision Making
Executive Action Simulation
Executive Decision Making
Integrated Business Decision Making
Management (2)
Management Decision Simulation (2)
Management Policy
Management Principles
Principles and Introduction to Business
Principles of Management (2)
Problems in General Management

General Management (alternative classification)

Administration
Business Enterprises
Business Communication
Business Games
Honors in Business
Introduction to Business
Management (2)
Management Game
Management Policy
Management Principles
Operations Management (6)
Principles and Introduction to Business
Principles of Management (2)
Problems in General Management

Quantitative Management (alternative classification)

Applications of Digital Computers to Problems in the Social Sciences
Business Quantitative Analysis
Business Simulation
Decision Making
Decision Mathematics I
Economic Analysis and Economic Policy
Executive Action Simulation
Executive Decision Making
Integrated Business Decision Making
Integrated Business Decision Making
Integrative Management Simulation
Logistics
Management Decision Simulation (2)
Quantitative Analysis for Business
Simulation of Business Enterprise
Transportation

Miscellaneous (Dale and Klasson classification)

Applications of Digital Computers to Problems in the Social Sciences
Business Communication
Business Games

Business Quantitative Analysis
Business Simulation
Decision Mathematics I
Economic Analysis and Economic Policy
Food and Beverage Management
Honors in Business
Integrative Management Simulation
Introduction to Business
Life Insurance
Logistics
Management and Organizational Behavior
Management Game
Operations Management (6)
Organizational Behavior
Physical Distribution
Planning and Control
Quantitative Analysis for Business
Simulation of Business Enterprise
Transportation

Miscellaneous (alternative classification)

Food and Beverage Management
Life Insurance
Management and Organizational Behavior
Organizational Behavior
Physical Distribution
Planning and Control

2. Part 2 - Numerical Effect of the Reclassification

	Classification Method	
	Dale and Klasson	Alternative
MANAGEMENT COURSES		
Total number, 1962	20	30
Total number, 1974	23	44
Total number, 1962, as % of all undergraduate courses 1962	26%	39%
Total number, 1974, as % of all undergraduate courses 1974	22%	42%

Breakdown by category, number of courses and their respective percentage of all management courses in a given year:

General Management, 1962	8 - 40%	9 - 30%
General Management, 1974	16 - 70%	21 - 48%

	Classification Method	
	Dale and Klasson	Alternative
Quantitative Management, 1962	----------	9 - 30%
Quantitative Management, 1974	----------	16 - 36%
Production Management, 1962	9 - 45%	9 - 30%
Production Management, 1974	6 - 26%	6 - 14%
Personnel Management, 1962	3 - 15%	3 - 10%
Personnel Management, 1974	1 - 4%	1 - 2%
MISCELLANEOUS COURSES		
Total number, 1962	12	2
Total number, 1974	27	6
Total number, 1962, as % of all undergraduate courses 1962	16%	3%
Total number, 1974, as % of all undergraduate courses 1974	26%	6%
EFFECT ON THE CONCLUSIONS OF THE COMPARATIVE STUDY[26]		
Subject areas accounting for majority of courses, 1962	b.p., mgt., mktg. (76% of all courses)	mgt., b.p., mktg. (89% of all courses)
Subject areas accounting for majority of courses, 1974	misc., b.p., mgt. (73% of all courses)	mgt., b.p., mktg. (80% of all courses)
Largest subject area, 1962	b.p. (21 courses)	mgt. (30 courses)
Largest subject area, 1974	misc. (27 courses)	mgt. (44 courses)
Subject areas increasing % share of total undergraduate courses, 1962-1974	fin., misc.	fin., mgt., misc.

[26]Abbreviations: accounting--actg., business policy--b.p., finance--fin., management--mgt., marketing--mktg., miscellaneous--misc.

	Classification Method	
	Dale and Klasson	Alternative
Subject area with greatest numerical increase in number of courses, 1962 to 1974	misc. (12--1962, 27--1974)	mgt. (30--1962, 44--1974)
Smallest subject area, 1962	fin. (1 course)	fin. (1 course)
Smallest subject area, 1974	actg. (3 courses)	actg. (3 courses)
Subject area decreasing % share of total undergraduate courses, 1962 to 1974	actg., b.p., mgt., mktg.	actg., b.p., mktg.
Subject area with greatest numerical decrease in number of courses, 1962 to 1974	mktg. (17--1962, 13--1972)	mktg. (17--1962, 13--1974)

3. Part 3 - Required and Elective Courses, Average Percentage of Course Time Devoted to Gaming

	Classification Method					
	Dale and Klasson			Alternative		
REQUIRED AND ELECTIVE COURSES (1974 only)						
	Elec.	Req.	Total	Elec.	Req.	Total
Management						
General Management	4	12	16	6	15	21
Quantitative Management	-	--	--	5	9	16
Production Management	0	6	6	0	6	6
Personnel Management	0	1	1	0	1	1
Total	4	19	23	11	31	44
Miscellaneous	8	17	27	1	5	6
EFFECT ON THE CONCLUSIONS OF THE 1974 SURVEY						
Subject area with largest number required courses 1974	b.p. (23 courses)			mgt. (31 courses)		
Subject area with smallest number required courses 1974	actg. (2 courses)			actg. (2 courses)		

	Classification Method	
	Dale and Klasson	Alternative
Subject area with largest number elective courses 1974	misc. (8 courses)	mgt. (11 courses)
Subject area with smallest number elective courses 1974	actg., fin. (1 course each)	actg., fin. (1 course each)
AVERAGE PERCENTAGE OF COURSE TIME DEVOTED TO GAMING (1974 courses only)		
Management		
General Management	56%	32%
Quantitative Management	---	61%
Production Management	21%	21%
Personnel Management	15.5%	15.5%
Average of all management courses	45%	41%
Miscellaneous	33%	15%
EFFECT ON THE CONCLUSIONS OF THE 1974 SURVEY		
Subject area with highest average % of course time devoted to gaming	mgt. (45% of course time)	mgt. (41% of course time)
Subject area with lowest average % of course time devoted to gaming	fin. (7% of course time)	fin. (7% of course time)

4. Part 4 - Revised Summary Comparison of Undergraduate Use of Management Games in 1962 and 1974

SUBJECT AREA	TOTAL NUMBER OF COURSES		SUBJECT AREA COURSES AS PERCENTAGE OF TOTAL COURSES	
	1962	1974	1962	1974
Accounting	5	3	7%	3%
Business Policy	21	26	28%	25%
Finance	1	11	1%	11%
Management	30	44	39%	42%
Marketing	17	13	22%	13%
Miscellaneous	2	6	3%	6%
Total	76	103	100%	100%

C. IMPLICATIONS OF THE ALTERNATIVE COURSE CLASSIFICATION SYSTEM ON THE GRADUATE LEVEL

1. Part 1 - Course Listings

a. 1962 Courses

General Management (Dale and Klasson classification)

Administration
Administrative Management (2)
Business Organization and Policy
Managerial Decision Making (2)
Organization and Administration
Seminar in Business Administration
Seminar in Business Management
Seminar in Management (2)
Survey of Management

General Management (alternative classification)

Administration
Administrative Management (2)
Business Organization and Policy
Business Research
C.I.T. Management Game Course
Organization and Administration
Seminar in Business Administration
Seminar in Business Management
Seminar in Management (2)
Survey of Management

Quantitative Management (alternative classification)

Business Economics
Business Programming and Control
Management Science
Management Simulation
Managerial Decision Making (2)
Operations Research
Quantitative Methods in Business

Miscellaneous (Dale and Klasson classification)

Business Economics
Business Programming and Control
Business Research
C.I.T. Management Game Course
Management Science
Management Simulation
Operations Research
Quantitative Methods in Business
Research Seminar
Seminar (undesignated) (3)
Special Study

Miscellaneous (alternative classification)

Research Seminar
Seminar (undesignated) (3)
Special Study

b. 1974 Courses

General Management (Dale and Klasson classification)

Conceptual Issues in Management
Management
Management Decision
Management Decision Making (3)
Management of Organizations
Management Simulation
Problems in General Management
Small Business Management

General Management (alternative classification)

Conceptual Issues in Management
Management
Management Game (3)
Management Gaming
Management of Organizations
Operations Management (2)
Problems in General Management
Small Business Management

Quantitative Management (alternative classification)

Analysis of Logistical Systems
Applications of Digital Computers to Problems in the Social Sciences
Applications of Quantitative Models
Applied Decisions II
Business Operations Analysis
Decision Models
Economic Analysis and Economic Policy (2)
Integrative Management Simulation
Management Decision
Management Decision Making (3)
Management Simulation
Mathematical Decision Methods

Miscellaneous (Dale and Klasson classification)

Analysis of Logistical Systems
Applications Digital Computers to Problems in the Social Sciences
Applications of Quantitative Models
Applied Decisions II
Business Operations Analysis
Decision Models

Economic Analysis and Economic Policy (2)
Information Systems
Integrative Management Simulation
International Marketing and International Finance
Life Insurance
Management Game (3)
Management Gaming
Mathematical Decision Methods
Mergers and Acquisitions
Operations Management (2)
Organizational Behavior

Miscellaneous (alternative classification)

Information Systems
International Marketing and International Finance
Life Insurance
Mergers and Acquisitions
Organizational Behavior

2. Part 2 - Numerical Effect of the Reclassification

	Classification Method	
	Dale and Klasson	Alternative
MANAGEMENT COURSES		
Total number, 1962	18	26
Total number, 1974	12	28
Total number, 1962, as % of all graduate courses 1962	24%	35%
Total number, 1974, as % of all graduate courses 1974	17%	39%

Breakdown by category, number of courses and their respective percentage of all management courses in a given year:

General Management, 1962	12 - 67%	12 - 46%
General Management, 1974	10 - 83%	11 - 39%
Quantitative Management, 1962	----------	8 - 31%
Quantitative Management, 1974	----------	15 - 54%
Production Management, 1962	5 - 28%	5 - 19%
Production Management, 1974	2 - 17%	2 - 17%

	Classification Method	
	Dale and Klasson	Alternative
Personnel Management, 1962	1 - 5%	1 - 4%
Personnel Management, 1974	0 - 0%	0 - 0%
MISCELLANEOUS COURSES		
Total number, 1962	13	5
Total number, 1974	21	5
Total number, 1962, as % of all graduate courses 1962	17.3%	7%
Total number, 1974, as % of all graduate courses 1974	30%	7%
EFFECT ON THE CONCLUSIONS OF THE COMPARATIVE STUDY		
Subject areas accounting for majority of courses, 1962	b.p., mktg., mgt. (80% of all courses)	mgt., b.p., mktg. (91% of all courses)
Subject areas accounting for majority of courses, 1974	misc., b.p., mgt. (74% of all courses)	mgt., b.p., fin. (81% of all courses)
Largest subject area, 1962	b.p. (23 courses)	mgt. (26 courses)
Largest subject area, 1974	misc. (21 courses)	mgt. (28 courses)
Subject areas increasing % share of total graduate courses, 1962 to 1974	actg., fin., misc.	actg., fin., mgt., misc.
Subject area with greatest numerical increase in number of courses, 1962 to 1974	fin. (1--1962, 11--1974)	fin. (1--1962, 11--1974)
Smallest subject area, 1962	actg., fin. (1 course each)	actg., fin. (1 course each)
Smallest subject area, 1974	actg. (2 courses)	actg. (2 courses)
Subject areas decreasing % share of total graduate courses, 1962 to 1974	b.p., mgt., mktg.	b.p., mktg.
Subject area with greatest numerical decrease in number of courses, 1962-1974	mktg. (19--1962, 6--1974)	mktg. (19--1962, 6--1974)

3. Part 3 - Required and Elective Courses, Average Percentage of Course Time Devoted to Gaming

	Classification Method					
	Dale and Klasson			Alternative		
REQUIRED AND ELECTIVE COURSES (1974 only)						
	Elec.	Req.	Total	Elec.	Req.	Total
Management						
General Management	2	8	10	5	6	11
Quantitative Management	-	--	--	3	10	15
Production Management	0	2	2	0	2	2
Personnel Management	0	0	0	0	0	0
Total	2	10	12	8	18	28
Miscellaneous	9	10	21	3	2	5
EFFECT ON THE CONCLUSIONS OF THE 1974 SURVEY						
Subject area with largest number required courses 1974	b.p. (16 courses)			mgt. (18 courses)		
Subject area with smallest number required courses 1974	actg. (2 courses)			actg., misc. (2 courses each)		
Subject area with largest number elective courses 1974	misc. (9 courses)			fin., misc. (8 courses each)		
Subject area with smallest number elective courses 1974	actg. (none)			actg. (none)		
AVERAGE PERCENTAGE OF COURSE TIME DEVOTED TO GAMING (1974 courses only)						
Management						
General Management	48.5%			54%		
Quantitative Management	-----			48%		
Production Management	9%			9%		
Personnel Management	(no courses)			(no courses)		
Average of all management courses	41%			47%		
Miscellaneous	42%			24%		

	Classification Method	
	Dale and Klasson	Alternative
EFFECT ON THE CONCLUSIONS OF THE 1974 SURVEY		
Subject area with highest average % of course time devoted to gaming	misc. (42% of course time)	mgt. (47% of course time)
Subject area with lowest average % of course time devoted to gaming	mktg. (15% of course time)	mktg. (15% of course time)

4. Part 4 - Revised Summary Comparison of Graduate Use of Management Games in 1962 and 1974

SUBJECT AREA	TOTAL NUMBER OF COURSES		SUBJECT AREA COURSES AS PERCENTAGE OF TOTAL COURSES	
	1962	1974	1962	1974
Accounting	1	2	1%	3%
Business Policy	23	19	31%	27%
Finance	1	11	1%	16%
Management	26	28	35%	39%
Marketing	19	6	25%	8%
Miscellaneous	5	5	7%	7%
Total	75	71	100%	100%

APPENDIX E

SCHOOLS OF BUSINESS RESPONDING TO THE SURVEY QUESTIONNAIRE[27]

Institution	Respondent
School of Commerce and Business Administration University of Alabama Tuscaloosa, Alabama 35486	A.J. Strickland
College of Business and Public Administration University of Arizona Tucson, Arizona 85721	Tim Shaftel
College of Business Administration University of Arkansas Fayetteville, Arkansas 72701	R.D. Hay
Hankamer School of Business Baylor University Waco, Texas 76706	H.N. Broom
College of Business Administration Boston College Chestnut Hill, Massachusetts 02167	J.E. Van Tassel, Jr.
College of Business Administration Boston University Boston, Massachusetts 02215	D. Carson
School of Business Administration University of California Berkeley, California 94720	Austin Hoggatt
Graduate School of Business Administration University of California at Los Angeles Los Angeles, California 90024	J.R. Jackson
Graduate School of Industrial Administration Carnegie-Mellon University Pittsburgh, Pennsylvania 15213	Richard Staelin
College of Business Administration University of Cincinnati Cincinnati, Ohio 45221	G.J. Gore

[27] Does not include 6 respondents who desired to remain anonymous.

Institution	Respondent
College of Business & Administration University of Colorado Boulder, Colorado 80304	K.A. Reed
Graduate School of Business Columbia University New York City, New York 10027	S.B. Richmond
School of Business Administration University of Connecticut Storrs, Connecticut 06268	Marvin Rothstein
Amos Tuck School of Business Administration Dartmouth College Hanover, New Hampshire 03755	Richard E. Curran, Jr.
College of Business Administration Drake University Des Moines, Iowa 50311	Walter A. Warrick
School of Business Administration Duquesne University Pittsburgh, Pennsylvania 15219	Blair J. Kolasa
School of Business Administration Emory University Atlanta, Georgia 30322	Ronald L. Jensen
College of Business Florida State University Tallahassee, Florida 32306	C.G. Chentnik
School of Business California State University Fresno, California 93726	Peter Simis
School of Business Administration Georgia State University Atlanta, Georgia 30303	Geoffrey Churchill
College of Business Administration University of Georgia Athens, Georgia 30601	R.R. Dincie
Harvard Business School Harvard University Cambridge, Massachusetts 02138	Christopher E. Nugent
Indiana School of Business Indiana University Bloomington, Indiana 47405	Joseph M. Waldman

Institution	Respondent
College of Business Administration University of Iowa Iowa City, Iowa 52240	C.R. Klasson
School of Business University of Kansas Lawrence, Kansas 66044	Gordon Fitch
Division of Business and Economics California State University at Los Angeles Log Angeles, California 90032	Marshall E. Reddick
College of Business Administration Louisiana State University Baton Rouge, Louisiana 70803	R.V. Lesikar
School of Business Administration Loyola University of Chicago Chicago, Illinois 60626	Earl G. Johnson
College of Business Administration Loyola University New Orleans, Louisiana 70118	George H. Wilson
Robert A. Johnston College of Business Administration Marquette University Milwaukee, Wisconsin 53233	Howard T. Healy
School of Business Administration University of Massachusetts Amherst, Massachusetts 01002	Sidney J. Claurich
School of Business Administration Miami University Oxford, Ohio 45056	George Williams
Graduate School of Business Administration Michigan State University East Lansing, Michigan 48823	R.C. Henshaw, Jr.
College of Business Mississippi State University Starkville, Mississippi 39759	Dennis F. Resy
School of Business Administration University of Montana Missoula, Montana 59801	Robert Connole
College of Business Administration University of Nebraska Lincoln, Nebraska 68508	Richard M. Hodgetts

Institution	Respondent
College of Business Administration University of Nevada Reno, Nevada 89507	Richard V. Cotter
School of Commerce, Accounts and Finance New York University Washington Square, New York 10003	Myron Uretsky
Graduate School of Business Administration New York University New York, New York 10006	Myron Uretsky
School of Business Administration North Texas State University Denton, Texas 76203	Kenneth Cox
Graduate School of Management Northwestern University Evanston, Illinois 60201	F.T. Hartzfield
College of Administrative Science The Ohio State University Columbus, Ohio 43210	J.A. Bartos
College of Business Administration University of Oklahoma Norman, Oklahoma 73069	L.D. Bishop
School of Business Administration University of Oregon Eugene, Oregon 97403	S. Vance
School of Business and Technology Oregon State University Corvallis, Oregon 97331	Clifford Gray
College of Business Administration Pennsylvania State University University Park, Pennsylvania 16802	Michael Holtonstein
The Wharton School University of Pennsylvania Philadelphia, Pennsylvania 19174	John F. Lubin
School of Commerce and Finance Saint Louis University Saint Louis, Missouri 63108	J.S. Wolf
Division of Business Administration San Diego State College San Diego, California 92115	A.C. Pierson

Institution	Respondent
College of Business Administration University of San Francisco San Francisco, California 94117	W. Regan
School of Business Administration University of South Carolina Columbia, South Carolina 29208	Herbert H. Hand
School of Business University of South Dakota Vermillion, South Dakota 57069	B.D. Perkins
School of Business Administration University of Southern California Los Angeles, California 90007	R. Nehrbass
School of Business Southern Illinois University Carbondale, Illinois 62901	Charles H. Henderson
School of Business Administration Southern Methodist University Dallas, Texas 75222	Eugene T. Byrne
Stanford Graduate School of Business Stanford University Palo Alto, California 94305	Gary G. Williams
College of Business Administration University of Tennessee Knoxville, Tennessee 37916	Oscar S. Fowler
College of Business Administration Texas Technological University Lubbock, Texas 79409	Richard F. Barton
College of Business Administration University of Texas Austin, Texas 78712	B.H. Sord
College of Business Administration The University of Toledo Toledo, Ohio 43606	S.T. Jutila
School of Business Administration Tulane University New Orleans, Louisiana 70118	Eric Vetter
College of Business Administration University of Tulsa Tulsa, Oklahoma 74104	R.M. Crowe

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Powell Niland

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University of Washington
Seattle, Washington 98105

B. Saxberg

School of Commerce and Administration
Washington and Lee University
Lexington, Virginia 24450

J.F. DeVogt

School of Commerce
University of Wisconsin
Madison, Wisconsin 53706

Robert H. Bock

APPENDIX F

SURVEY QUESTIONNAIRE

CURRENT UTILIZATION OF MANAGEMENT GAMING IN COLLEGIATE SCHOOLS OF BUSINESS

Directions: Please check appropriate box or space and, if necessary, write replies in space provided. If explanatory notes are in order, please attach.

	YES	NO
I. Currently, is a management game being used in any way in the college's curriculum?	( )	( )
A. If no:		
1. Has a game been used at any time in the past?	( )	( )
2. Will a game be used within the current academic year?	( )	( )
3. Has lack of adequate facilities and funds prevented use of games?	( )	( )
4. Has lack of qualified faculty members prevented use of games?	( )	( )
5. Has lack of appropriate games prevented their use?	( )	( )
6. Is it felt that games are not as yet proven and effective techniques?	( )	( )
7. Would the school like to use games?	( )	( )
B. If yes:		
1. When did the college first start using games in the graduate program?	_____	
in the undergraduate program?	_____	
2. Has gaming been permanently integrated into the curriculum?	( )	( )
3. Did the college's faculty develop games(s) now in use?	( )	( )
4. At present is the college engaged in any specific research directed at the scientific validation of potential educational values of the game technique?	( )	( )

II. Descriptive information about games used:

Name of game	Computer	Non-computer	General management	Functional	Names of courses used in	Course credit (in hours) Semester	Course credit (in hours) Quarter	Is course required? Yes	Is course required? No
1. _____	____	____	____	____	_____	____	____	____	____
2. _____	____	____	____	____	_____	____	____	____	____
3. _____	____	____	____	____	_____	____	____	____	____
4. _____	____	____	____	____	_____	____	____	____	____
5. _____	____	____	____	____	_____	____	____	____	____

(continuation from above)	Percent of total course time devoted to game	Type of course: Graduate	Type of course: Undergraduate	Year in which course taken: Graduate 1 or 2	Year in which course taken: Undergraduate 1, 2, 3, or 4	Total number of students trained to date
1. (above)	_____	_____	_____	_____	_____	_____
2. (above)	_____	_____	_____	_____	_____	_____
3. (above)	_____	_____	_____	_____	_____	_____
4. (above)	_____	_____	_____	_____	_____	_____
5. (above)	_____	_____	_____	_____	_____	_____

III. Identification information:

A. Name of college _____ B. Location _____

C. Current full-time student enrollment:
1. Graduate school _____
2. Undergraduate school _____

D. Questionnaire completed by _____

Title _____ Date _____

LIST OF REFERENCES

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Thesis
S7885 Strauss
c.1 Recent trends in management gaming - a comparative survey of management gaming practices in American collegiate schools of business in 1962 and 1974.
152904